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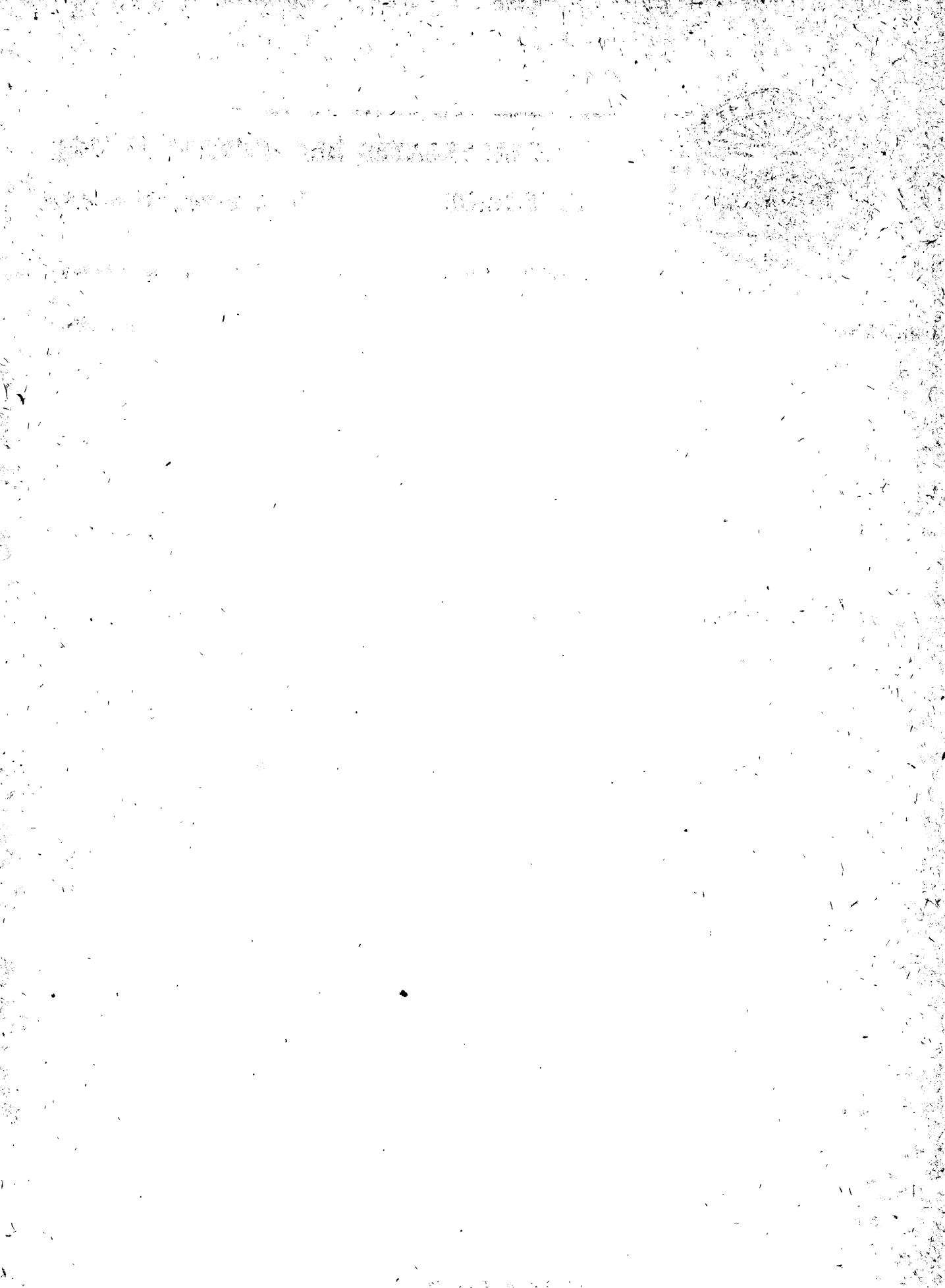
August 1948

TABLES OF d SPACINGS FOR ANGLE 2θ
 $\text{CuK}\alpha$, $\text{CuK}\alpha_1$, $\text{CuK}\alpha_2$, $\text{FeK}\alpha$, $\text{FeK}\alpha_1$, $\text{FeK}\alpha_2$

By

George Switzer, Joseph M. Axelrod, Marie L. Lindberg,
and Esper S. Larsen 3d

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TABLES OF d SPACINGS FOR ANGLE 2 θ

| | |
|----------------|----------------|
| CuK α | FeK α |
| CuK α_1 | FeK α_1 |
| CuK α_2 | FeK α_2 |

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These tables differ from previously available tables in two ways: (1) d values have been calculated as Ångstrom units rather than kX units, and (2) d values have been calculated for an average K α wave length for values of θ up to 75°.

Calculation in terms of true Ångstrom units has been made possible by use of the x-ray wave lengths agreed upon at the July 1946 conference of the X-ray Analysis Group of the Institute of Physics (Great Britain). Because the adoption of the revised wave lengths has also been recommended by the American Society for X-ray and Electron Diffraction, it is desirable that kX units ($1\text{\AA} = 1.00202 \text{ kX}$) no longer be used for calculations of this sort.

The average values of K α for copper and iron were used in calculating the average d values because the lines due to K α_1 and K α_2 are not resolved until the high angle region of a Debye-Scherrer type diffraction pattern is reached. It is therefore more convenient to have a table calculated for the average wave lengths for angles up to $\theta = 75^\circ$. For high angles ($\theta = 45^\circ$ to $\theta = 87.5^\circ$) separate tables are given for K α_1 and K α_2 for copper and iron.

The following wave lengths have been used for calculating these tables:¹

$$\begin{array}{ll} \text{CuK}\alpha = 1.5418\text{\AA} & \text{FeK}\alpha = 1.9373\text{\AA} \\ \text{CuK}\alpha_1 = 1.54050\text{\AA} & \text{FeK}\alpha_1 = 1.93597\text{\AA} \\ \text{CuK}\alpha_2 = 1.54434\text{\AA} & \text{FeK}\alpha_2 = 1.93991\text{\AA} \end{array}$$

The d spacings have been tabulated in terms of 2 θ in order to facilitate their use with powder cameras having an effective diameter of 114.59 mm. With 114.59 mm. diameter cameras, center-to-line measurements on the film in millimeters are equal to the angle 2 θ , hence the d spacings may be looked up directly from the film measurements. If cameras having a diameter of 57.3 mm. are being used, the film distance in millimeters must be doubled.

As a check on accuracy, each table has been calculated completely and independently twice. In the calculations, seven-place tables of natural trigonometric functions were used, and the calculated values rounded off to five significant figures.

¹/ For a complete list of the new x-ray wave lengths, see either the Jour. Sci. Instr., Jan. 1947, p. 27; or American Mineralogist, vol. 32, p. 292, 1947.

COPPER - Ka; $\lambda = 1.5418 \text{ \AA}$

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2 | 44.171 | 42.068 | 40.156 | 38.410 | 36.810 | 35.338 | 33.979 | 32.721 | 31.552 | 30.464 |
| 3 | 29.449 | 28.499 | 27.509 | 26.773 | 25.985 | 25.243 | 24.542 | 23.879 | 23.251 | 22.655 |
| 4 | 22.089 | 21.550 | 21.037 | 20.548 | 20.082 | 19.636 | 19.209 | 18.800 | 18.409 | 18.034 |
| 5 | 17.673 | 17.327 | 16.994 | 16.673 | 16.365 | 16.068 | 15.781 | 15.504 | 15.237 | 14.979 |
| 6 | 14.730 | 14.488 | 14.255 | 14.029 | 13.810 | 13.598 | 13.392 | 13.192 | 12.998 | 12.810 |
| 7 | 12.628 | 12.450 | 12.277 | 12.109 | 11.946 | 11.787 | 11.632 | 11.481 | 11.334 | 11.191 |
| 8 | 11.051 | 10.915 | 10.782 | 10.652 | 10.526 | 10.402 | 10.281 | 10.163 | 10.048 | 9.9355 |
| 9 | 9.8254 | 9.7176 | 9.6122 | 9.5091 | 9.4082 | 9.3093 | 9.2126 | 9.1178 | 9.0250 | 8.9341 |
| 10 | 8.8450 | 8.7576 | 8.6720 | 8.5880 | 8.5057 | 8.4249 | 8.3456 | 8.2678 | 8.1915 | 8.1166 |
| 11 | 8.0430 | 7.9708 | 7.8998 | 7.8302 | 7.7617 | 7.6944 | 7.6283 | 7.5634 | 7.4995 | 7.4367 |
| 12 | 7.3750 | 7.3142 | 7.2545 | 7.1957 | 7.1379 | 7.0810 | 7.0251 | 6.9699 | 6.9157 | 6.8624 |
| 13 | 6.8098 | 6.7580 | 6.7071 | 6.6569 | 6.6074 | 6.5587 | 6.5107 | 6.4634 | 6.4168 | 6.3708 |
| 14 | 6.3256 | 6.2809 | 6.2369 | 6.1935 | 6.1507 | 6.1085 | 6.0669 | 6.0259 | 5.9854 | 5.9454 |
| 15 | 5.9080 | 5.8671 | 5.8288 | 5.7909 | 5.7535 | 5.7166 | 5.6802 | 5.6442 | 5.6088 | 5.5737 |
| 16 | 5.5391 | 5.5049 | 5.4711 | 5.4378 | 5.4049 | 5.3723 | 5.3402 | 5.3084 | 5.2771 | 5.2461 |
| 17 | 5.2154 | 5.1852 | 5.1552 | 5.1257 | 5.0964 | 5.0675 | 5.0390 | 5.0107 | 4.9828 | 4.9552 |
| 18 | 4.9279 | 4.9009 | 4.8742 | 4.8478 | 4.8216 | 4.7958 | 4.7702 | 4.7450 | 4.7199 | 4.6952 |
| 19 | 4.6707 | 4.6465 | 4.6225 | 4.5988 | 4.5753 | 4.5521 | 4.5291 | 4.5063 | 4.4838 | 4.4615 |
| 20 | 4.4394 | 4.4175 | 4.3959 | 4.3744 | 4.3532 | 4.3322 | 4.3114 | 4.2908 | 4.2704 | 4.2502 |
| 21 | 4.2302 | 4.2104 | 4.1907 | 4.1713 | 4.1520 | 4.1329 | 4.1140 | 4.0953 | 4.0767 | 4.0583 |
| 22 | 4.0401 | 4.0220 | 4.0042 | 3.9864 | 3.9689 | 3.9515 | 3.9342 | 3.9171 | 3.9001 | 3.8833 |
| 23 | 3.8667 | 3.8502 | 3.8338 | 3.8176 | 3.8015 | 3.7855 | 3.7697 | 3.7540 | 3.7385 | 3.7231 |
| 24 | 3.7078 | 3.6926 | 3.6776 | 3.6627 | 3.6479 | 3.6332 | 3.6187 | 3.6043 | 3.5900 | 3.5758 |
| 25 | 3.5617 | 3.5477 | 3.5339 | 3.5201 | 3.5065 | 3.4930 | 3.4796 | 3.4662 | 3.4530 | 3.4399 |
| 26 | 3.4269 | 3.4140 | 3.4012 | 3.3885 | 3.3759 | 3.3634 | 3.3510 | 3.3386 | 3.3264 | 3.3143 |
| 27 | 3.3022 | 3.2903 | 3.2784 | 3.2666 | 3.2549 | 3.2433 | 3.2318 | 3.2203 | 3.2090 | 3.1977 |
| 28 | 3.1865 | 3.1754 | 3.1644 | 3.1534 | 3.1426 | 3.1318 | 3.1210 | 3.1104 | 3.0998 | 3.0893 |
| 29 | 3.0789 | 3.0685 | 3.0582 | 3.0480 | 3.0379 | 3.0278 | 3.0178 | 3.0079 | 2.9980 | 2.9882 |
| 30 | 2.9785 | 2.9688 | 2.9592 | 2.9497 | 2.9402 | 2.9308 | 2.9214 | 2.9122 | 2.9029 | 2.8938 |
| 31 | 2.8847 | 2.8756 | 2.8666 | 2.8577 | 2.8488 | 2.8400 | 2.8312 | 2.8225 | 2.8139 | 2.8053 |
| 32 | 2.7968 | 2.7883 | 2.7798 | 2.7715 | 2.7631 | 2.7549 | 2.7466 | 2.7385 | 2.7303 | 2.7223 |
| 33 | 2.7143 | 2.7063 | 2.6984 | 2.6905 | 2.6827 | 2.6749 | 2.6671 | 2.6595 | 2.6518 | 2.6442 |
| 34 | 2.6367 | 2.6292 | 2.6217 | 2.6143 | 2.6069 | 2.5996 | 2.5923 | 2.5851 | 2.5779 | 2.5707 |
| 35 | 2.5636 | 2.5565 | 2.5495 | 2.5425 | 2.5355 | 2.5286 | 2.5218 | 2.5149 | 2.5081 | 2.5014 |
| 36 | 2.4947 | 2.4880 | 2.4813 | 2.4747 | 2.4682 | 2.4616 | 2.4551 | 2.4487 | 2.4422 | 2.4358 |
| 37 | 2.4295 | 2.4232 | 2.4169 | 2.4106 | 2.4044 | 2.3982 | 2.3921 | 2.3860 | 2.3799 | 2.3738 |
| 38 | 2.3678 | 2.3618 | 2.3559 | 2.3500 | 2.3441 | 2.3382 | 2.3324 | 2.3266 | 2.3208 | 2.3151 |
| 39 | 2.3094 | 2.3037 | 2.2981 | 2.2924 | 2.2869 | 2.2813 | 2.2758 | 2.2703 | 2.2648 | 2.2593 |
| 40 | 2.2539 | 2.2485 | 2.2432 | 2.2378 | 2.2325 | 2.2273 | 2.2220 | 2.2168 | 2.2116 | 2.2064 |
| 41 | 2.2012 | 2.1961 | 2.1910 | 2.1859 | 2.1809 | 2.1759 | 2.1709 | 2.1659 | 2.1609 | 2.1560 |
| 42 | 2.1511 | 2.1462 | 2.1414 | 2.1365 | 2.1317 | 2.1270 | 2.1222 | 2.1175 | 2.1127 | 2.1080 |
| 43 | 2.1034 | 2.0987 | 2.0941 | 2.0895 | 2.0849 | 2.0804 | 2.0758 | 2.0713 | 2.0668 | 2.0623 |
| 44 | 2.0579 | 2.0534 | 2.0490 | 2.0446 | 2.0402 | 2.0359 | 2.0316 | 2.0273 | 2.0230 | 2.0187 |
| 45 | 2.0144 | 2.0102 | 2.0060 | 2.0018 | 1.9976 | 1.9935 | 1.9893 | 1.9852 | 1.9811 | 1.9770 |
| 46 | 1.9729 | 1.9689 | 1.9649 | 1.9609 | 1.9569 | 1.9529 | 1.9489 | 1.9450 | 1.9411 | 1.9372 |
| 47 | 1.9333 | 1.9294 | 1.9255 | 1.9217 | 1.9179 | 1.9141 | 1.9103 | 1.9065 | 1.9028 | 1.8990 |
| 48 | 1.8953 | 1.8916 | 1.8879 | 1.8842 | 1.8806 | 1.8769 | 1.8733 | 1.8697 | 1.8661 | 1.8625 |
| 49 | 1.8589 | 1.8554 | 1.8519 | 1.8483 | 1.8448 | 1.8413 | 1.8378 | 1.8344 | 1.8309 | 1.8275 |
| 50. | 1.8241 | 1.8207 | 1.8173 | 1.8139 | 1.8105 | 1.8072 | 1.8039 | 1.8005 | 1.7972 | 1.7939 |
| 51 | 1.7906 | 1.7874 | 1.7841 | 1.7809 | 1.7776 | 1.7744 | 1.7712 | 1.7680 | 1.7648 | 1.7617 |
| 52 | 1.7585 | 1.7554 | 1.7523 | 1.7491 | 1.7460 | 1.7430 | 1.7399 | 1.7368 | 1.7338 | 1.7307 |
| 53 | 1.7277 | 1.7247 | 1.7217 | 1.7187 | 1.7157 | 1.7127 | 1.7098 | 1.7068 | 1.7039 | 1.7009 |
| 54 | 1.6980 | 1.6951 | 1.6922 | 1.6894 | 1.6865 | 1.6836 | 1.6808 | 1.6779 | 1.6751 | 1.6723 |
| 55 | 1.6695 | 1.6667 | 1.6639 | 1.6612 | 1.6584 | 1.6556 | 1.6529 | 1.6502 | 1.6474 | 1.6447 |
| 56 | 1.6420 | 1.6393 | 1.6367 | 1.6340 | 1.6313 | 1.6287 | 1.6260 | 1.6234 | 1.6208 | 1.6182 |
| 57 | 1.6156 | 1.6130 | 1.6104 | 1.6078 | 1.6053 | 1.6027 | 1.6002 | 1.5976 | 1.5951 | 1.5926 |
| 58 | 1.5901 | 1.5876 | 1.5851 | 1.5826 | 1.5801 | 1.5777 | 1.5752 | 1.5728 | 1.5703 | 1.5679 |
| 59 | 1.5655 | 1.5631 | 1.5607 | 1.5583 | 1.5559 | 1.5535 | 1.5512 | 1.5488 | 1.5465 | 1.5441 |
| 60 | 1.5418 | 1.5395 | 1.5371 | 1.5348 | 1.5325 | 1.5302 | 1.5279 | 1.5257 | 1.5234 | 1.5211 |

COPPER - $K\alpha$; $\lambda = 1.5418 \text{ \AA}$. --Continued

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 61 | 1.5169 | 1.5166 | 1.5144 | 1.5122 | 1.5099 | 1.5077 | 1.5055 | 1.5033 | 1.5011 | 1.4989 |
| 62 | 1.4958 | 1.4946 | 1.4924 | 1.4903 | 1.4881 | 1.4860 | 1.4839 | 1.4817 | 1.4796 | 1.4775 |
| 63 | 1.4754 | 1.4733 | 1.4712 | 1.4691 | 1.4670 | 1.4650 | 1.4629 | 1.4609 | 1.4588 | 1.4568 |
| 64 | 1.4547 | 1.4527 | 1.4507 | 1.4487 | 1.4467 | 1.4447 | 1.4427 | 1.4407 | 1.4387 | 1.4367 |
| 65 | 1.4347 | 1.4328 | 1.4308 | 1.4289 | 1.4269 | 1.4250 | 1.4231 | 1.4211 | 1.4192 | 1.4173 |
| 66 | 1.4154 | 1.4135 | 1.4116 | 1.4097 | 1.4079 | 1.4060 | 1.4041 | 1.4023 | 1.4004 | 1.3985 |
| 67 | 1.3967 | 1.3949 | 1.3930 | 1.3912 | 1.3894 | 1.3876 | 1.3858 | 1.3840 | 1.3822 | 1.3804 |
| 68 | 1.3786 | 1.3768 | 1.3750 | 1.3733 | 1.3715 | 1.3697 | 1.3680 | 1.3662 | 1.3645 | 1.3628 |
| 69 | 1.3610 | 1.3593 | 1.3576 | 1.3559 | 1.3542 | 1.3524 | 1.3507 | 1.3491 | 1.3474 | 1.3457 |
| 70 | 1.3440 | 1.3423 | 1.3407 | 1.3390 | 1.3373 | 1.3357 | 1.3340 | 1.3324 | 1.3308 | 1.3291 |
| 71 | 1.3275 | 1.3259 | 1.3243 | 1.3227 | 1.3211 | 1.3195 | 1.3179 | 1.3163 | 1.3147 | 1.3131 |
| 72 | 1.3115 | 1.3099 | 1.3084 | 1.3068 | 1.3053 | 1.3037 | 1.3022 | 1.3006 | 1.2991 | 1.2975 |
| 73 | 1.2960 | 1.2945 | 1.2930 | 1.2914 | 1.2899 | 1.2884 | 1.2869 | 1.2854 | 1.2839 | 1.2824 |
| 74 | 1.2809 | 1.2795 | 1.2780 | 1.2765 | 1.2750 | 1.2736 | 1.2721 | 1.2707 | 1.2692 | 1.2678 |
| 75 | 1.2663 | 1.2649 | 1.2635 | 1.2620 | 1.2606 | 1.2592 | 1.2578 | 1.2563 | 1.2549 | 1.2535 |
| 76 | 1.2521 | 1.2507 | 1.2493 | 1.2480 | 1.2466 | 1.2452 | 1.2438 | 1.2424 | 1.2411 | 1.2397 |
| 77 | 1.2383 | 1.2370 | 1.2356 | 1.2343 | 1.2329 | 1.2316 | 1.2303 | 1.2289 | 1.2276 | 1.2263 |
| 78 | 1.2250 | 1.2236 | 1.2223 | 1.2210 | 1.2197 | 1.2184 | 1.2171 | 1.2158 | 1.2145 | 1.2132 |
| 79 | 1.2119 | 1.2107 | 1.2094 | 1.2081 | 1.2068 | 1.2056 | 1.2043 | 1.2030 | 1.2018 | 1.2005 |
| 80 | 1.1993 | 1.1980 | 1.1968 | 1.1956 | 1.1943 | 1.1931 | 1.1919 | 1.1906 | 1.1894 | 1.1882 |
| 81 | 1.1870 | 1.1858 | 1.1846 | 1.1834 | 1.1822 | 1.1810 | 1.1798 | 1.1786 | 1.1774 | 1.1762 |
| 82 | 1.1750 | 1.1739 | 1.1727 | 1.1715 | 1.1703 | 1.1692 | 1.1680 | 1.1669 | 1.1657 | 1.1645 |
| 83 | 1.1634 | 1.1623 | 1.1611 | 1.1600 | 1.1588 | 1.1577 | 1.1566 | 1.1554 | 1.1543 | 1.1532 |
| 84 | 1.1521 | 1.1510 | 1.1498 | 1.1487 | 1.1476 | 1.1465 | 1.1454 | 1.1443 | 1.1433 | 1.1421 |
| 85 | 1.1411 | 1.1400 | 1.1389 | 1.1378 | 1.1367 | 1.1357 | 1.1346 | 1.1335 | 1.1325 | 1.1314 |
| 86 | 1.1303 | 1.1293 | 1.1282 | 1.1272 | 1.1261 | 1.1251 | 1.1240 | 1.1230 | 1.1220 | 1.1209 |
| 87 | 1.1199 | 1.1189 | 1.1178 | 1.1168 | 1.1158 | 1.1148 | 1.1138 | 1.1128 | 1.1118 | 1.1107 |
| 88 | 1.1098 | 1.1088 | 1.1078 | 1.1067 | 1.1057 | 1.1048 | 1.1038 | 1.1028 | 1.1018 | 1.1008 |
| 89 | 1.0998 | 1.0989 | 1.0979 | 1.0969 | 1.0960 | 1.0950 | 1.0940 | 1.0931 | 1.0921 | 1.0912 |
| 90 | 1.0902 | 1.0893 | 1.0883 | 1.0874 | 1.0864 | 1.0855 | 1.0845 | 1.0836 | 1.0827 | 1.0817 |
| 91 | 1.0808 | 1.0799 | 1.0790 | 1.0780 | 1.0771 | 1.0762 | 1.0753 | 1.0744 | 1.0735 | 1.0726 |
| 92 | 1.0717 | 1.0708 | 1.0699 | 1.0690 | 1.0681 | 1.0672 | 1.0663 | 1.0654 | 1.0645 | 1.0636 |
| 93 | 1.0627 | 1.0619 | 1.0610 | 1.0601 | 1.0592 | 1.0584 | 1.0575 | 1.0566 | 1.0558 | 1.0549 |
| 94 | 1.0541 | 1.0532 | 1.0523 | 1.0515 | 1.0506 | 1.0498 | 1.0490 | 1.0481 | 1.0473 | 1.0464 |
| 95 | 1.0456 | 1.0448 | 1.0439 | 1.0431 | 1.0423 | 1.0414 | 1.0406 | 1.0398 | 1.0390 | 1.0382 |
| 96 | 1.0373 | 1.0365 | 1.0357 | 1.0349 | 1.0341 | 1.0333 | 1.0325 | 1.0317 | 1.0309 | 1.0301 |
| 97 | 1.0293 | 1.0285 | 1.0277 | 1.0269 | 1.0261 | 1.0253 | 1.0246 | 1.0238 | 1.0230 | 1.0222 |
| 98 | 1.0214 | 1.0207 | 1.0199 | 1.0191 | 1.0184 | 1.0176 | 1.0168 | 1.0161 | 1.0153 | 1.0145 |
| 99 | 1.0138 | 1.0130 | 1.0123 | 1.0115 | 1.0108 | 1.0100 | 1.0093 | 1.0085 | 1.0078 | 1.0071 |
| 100 | 1.0063 | 1.0056 | 1.0049 | 1.0041 | 1.0034 | 1.0027 | 1.0019 | 1.0012 | 1.0005 | .99977 |
| 101 | .99905 | .99833 | .99761 | .99690 | .99619 | .99548 | .99477 | .99406 | .99336 | .99265 |
| 102 | .99195 | .99125 | .99055 | .98985 | .98916 | .98847 | .98778 | .98709 | .98640 | .98571 |
| 103 | .98503 | .98434 | .98366 | .98298 | .98231 | .98163 | .98095 | .98028 | .97961 | .97894 |
| 104 | .97827 | .97761 | .97694 | .97628 | .97562 | .97496 | .97430 | .97364 | .97300 | .97234 |
| 105 | .97169 | .97104 | .97039 | .96974 | .96910 | .96845 | .96781 | .96717 | .96653 | .96589 |
| 106 | .96526 | .96463 | .96399 | .96336 | .96273 | .96210 | .96148 | .96085 | .96023 | .95961 |
| 107 | .95899 | .95837 | .95775 | .95714 | .95652 | .95591 | .95530 | .95469 | .95408 | .95348 |
| 108 | .95287 | .95227 | .95167 | .95107 | .95047 | .94987 | .94927 | .94868 | .94809 | .94750 |
| 109 | .94690 | .94632 | .94573 | .94514 | .94456 | .94398 | .94339 | .94281 | .94224 | .94166 |
| 110 | .94108 | .94051 | .93994 | .93936 | .93879 | .93823 | .93766 | .93709 | .93653 | .93596 |
| 111 | .93540 | .93484 | .93428 | .93373 | .93317 | .93262 | .93206 | .93151 | .93096 | .93041 |
| 112 | .92986 | .92931 | .92877 | .92823 | .92768 | .92714 | .92660 | .92606 | .92553 | .92499 |
| 113 | .92446 | .92392 | .92339 | .92286 | .92233 | .92180 | .92127 | .92075 | .92023 | .91970 |
| 114 | .91918 | .91866 | .91814 | .91762 | .91711 | .91659 | .91608 | .91557 | .91506 | .91454 |
| 115 | .91404 | .91353 | .91302 | .91252 | .91201 | .91151 | .91101 | .91051 | .91001 | .90951 |
| 116 | .90902 | .90852 | .90803 | .90754 | .90704 | .90655 | .90606 | .90558 | .90509 | .90461 |
| 117 | .90412 | .90364 | .90316 | .90268 | .90220 | .90172 | .90124 | .90077 | .90029 | .89982 |
| 118 | .89935 | .89888 | .89841 | .89794 | .89747 | .89700 | .89654 | .89607 | .89561 | .89515 |
| 119 | .89469 | .89423 | .89377 | .89331 | .89286 | .89240 | .89195 | .89150 | .89105 | .89060 |
| 120 | .89016 | .88970 | .88925 | .88881 | .88836 | .88792 | .88748 | .88704 | .88660 | .88616 |

COPPER - $K\alpha$; $\lambda = 1.5418 \text{ \AA}$. —Continued

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 121 | .88572 | .88528 | .88485 | .88441 | .88398 | .88355 | .88311 | .88268 | .88226 | .88183 |
| 122 | .88140 | .88097 | .88055 | .88013 | .87970 | .87928 | .87886 | .87844 | .87802 | .87761 |
| 123 | .87719 | .87678 | .87636 | .87595 | .87554 | .87513 | .87472 | .87431 | .87390 | .87349 |
| 124 | .87309 | .87268 | .87228 | .87188 | .87147 | .87107 | .87067 | .87028 | .86988 | .86948 |
| 125 | .86909 | .86869 | .86830 | .86791 | .86752 | .86713 | .86674 | .86635 | .86596 | .86558 |
| 126 | .86519 | .86481 | .86442 | .86404 | .86366 | .86328 | .86290 | .86252 | .86214 | .86177 |
| 127 | .86139 | .86102 | .86065 | .86027 | .85990 | .85953 | .85916 | .85879 | .85843 | .85808 |
| 128 | .85769 | .85733 | .85697 | .85660 | .85624 | .85588 | .85552 | .85516 | .85480 | .85445 |
| 129 | .85409 | .85374 | .85338 | .85303 | .85268 | .85233 | .85197 | .85163 | .85128 | .85093 |
| 130 | .85058 | .85024 | .84989 | .84955 | .84921 | .84886 | .84852 | .84818 | .84784 | .84751 |
| 131 | .84717 | .84683 | .84650 | .84616 | .84583 | .84549 | .84516 | .84483 | .84450 | .84417 |
| 132 | .84384 | .84352 | .84319 | .84286 | .84254 | .84222 | .84189 | .84157 | .84125 | .84093 |
| 133 | .84061 | .84029 | .83997 | .83966 | .83934 | .83903 | .83871 | .83840 | .83809 | .83778 |
| 134 | .83746 | .83715 | .83685 | .83654 | .83623 | .83592 | .83562 | .83531 | .83501 | .83471 |
| 135 | .83441 | .83410 | .83380 | .83350 | .83321 | .83291 | .83261 | .83231 | .83202 | .83173 |
| 136 | .83143 | .83114 | .83085 | .83056 | .83027 | .82998 | .82969 | .82940 | .82911 | .82883 |
| 137 | .82854 | .82826 | .82797 | .82769 | .82741 | .82713 | .82685 | .82657 | .82629 | .82601 |
| 138 | .82573 | .82546 | .82518 | .82491 | .82464 | .82436 | .82409 | .82382 | .82355 | .82328 |
| 139 | .82301 | .82274 | .82247 | .82221 | .82194 | .82168 | .82141 | .82115 | .82089 | .82062 |
| 140 | .82036 | .82010 | .81984 | .81959 | .81933 | .81907 | .81881 | .81856 | .81830 | .81805 |
| 141 | .81780 | .81755 | .81729 | .81704 | .81679 | .81654 | .81630 | .81605 | .81580 | .81555 |
| 142 | .81531 | .81506 | .81482 | .81458 | .81434 | .81409 | .81385 | .81361 | .81337 | .81314 |
| 143 | .81290 | .81266 | .81242 | .81219 | .81195 | .81172 | .81149 | .81125 | .81102 | .81079 |
| 144 | .81086 | .81033 | .81010 | .80988 | .80965 | .80942 | .80920 | .80897 | .80875 | .80852 |
| 145 | .80830 | .80808 | .80786 | .80764 | .80742 | .80720 | .80698 | .80676 | .80654 | .80633 |
| 146 | .80611 | .80590 | .80568 | .80547 | .80526 | .80505 | .80484 | .80463 | .80442 | .80421 |
| 147 | .80400 | .80379 | .80358 | .80338 | .80317 | .80297 | .80276 | .80256 | .80236 | .80216 |
| 148 | .80196 | .80176 | .80156 | .80136 | .80116 | .80096 | .80077 | .80057 | .80037 | .80018 |
| 149 | .79999 | .79979 | .79960 | .79941 | .79922 | .79903 | .79884 | .79865 | .79846 | .79827 |
| 150 | .79808 | .79790 | .79771 | .79753 | .79734 | .79716 | .79698 | .79679 | .79661 | .79643 |



COPPER - $K\alpha_1$; $\lambda = 1.54050 \text{ \AA}$

| 26. | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 90 | 1.0893 | 1.0883 | 1.0874 | 1.0865 | 1.0855 | 1.0846 | 1.0836 | 1.0827 | 1.0818 | 1.0808 |
| 91 | 1.0799 | 1.0790 | 1.0781 | 1.0771 | 1.0762 | 1.0753 | 1.0744 | 1.0735 | 1.0726 | 1.0717 |
| 92 | 1.0708 | 1.0699 | 1.0690 | 1.0681 | 1.0672 | 1.0663 | 1.0654 | 1.0645 | 1.0636 | 1.0627 |
| 93 | 1.0619 | 1.0610 | 1.0601 | 1.0592 | 1.0584 | 1.0575 | 1.0566 | 1.0558 | 1.0549 | 1.0540 |
| 94 | 1.0532 | 1.0523 | 1.0515 | 1.0506 | 1.0498 | 1.0489 | 1.0481 | 1.0472 | 1.0464 | 1.0456 |
| 95 | 1.0447 | 1.0439 | 1.0431 | 1.0422 | 1.0414 | 1.0406 | 1.0397 | 1.0389 | 1.0381 | 1.0373 |
| 96 | 1.0365 | 1.0357 | 1.0348 | 1.0340 | 1.0332 | 1.0324 | 1.0316 | 1.0308 | 1.0300 | 1.0292 |
| 97 | 1.0284 | 1.0276 | 1.0268 | 1.0261 | 1.0253 | 1.0245 | 1.0237 | 1.0229 | 1.0221 | 1.0214 |
| 98 | 1.0206 | 1.0198 | 1.0190 | 1.0183 | 1.0175 | 1.0167 | 1.0160 | 1.0152 | 1.0145 | 1.0137 |
| 99 | 1.0129 | 1.0122 | 1.0114 | 1.0107 | 1.0099 | 1.0092 | 1.0084 | 1.0077 | 1.0070 | 1.0062 |
| 100 | 1.0055 | 1.0048 | 1.0040 | 1.0033 | 1.0026 | 1.0018 | 1.0011 | 1.0004 | .99966 | .99894 |
| 101 | .99822 | .99750 | .99679 | .99607 | .99536 | .99465 | .99394 | .99324 | .99253 | .99183 |
| 102 | .99113 | .99043 | .98973 | .98903 | .98834 | .98765 | .98696 | .98627 | .98558 | .98489 |
| 103 | .98421 | .98353 | .98285 | .98217 | .98149 | .98081 | .98014 | .97947 | .97880 | .97813 |
| 104 | .97746 | .97680 | .97613 | .97547 | .97481 | .97415 | .97349 | .97284 | .97218 | .97153 |
| 105 | .97088 | .97023 | .96958 | .96894 | .96829 | .96765 | .96701 | .96637 | .96573 | .96509 |
| 106 | .96446 | .96382 | .96319 | .96256 | .96193 | .96131 | .96068 | .96006 | .95943 | .95881 |
| 107 | .95819 | .95758 | .95696 | .95634 | .95573 | .95512 | .95451 | .95390 | .95329 | .95269 |
| 108 | .95208 | .95148 | .95088 | .95028 | .94968 | .94908 | .94849 | .94789 | .94730 | .94671 |
| 109 | .94612 | .94553 | .94494 | .94436 | .94377 | .94319 | .94261 | .94203 | .94145 | .94088 |
| 110 | .94030 | .93973 | .93916 | .93858 | .93801 | .93745 | .93688 | .93631 | .93575 | .93519 |
| 111 | .93463 | .93407 | .93351 | .93295 | .93240 | .93184 | .93129 | .93074 | .93019 | .92954 |
| 112 | .92909 | .92854 | .92800 | .92745 | .92691 | .92637 | .92583 | .92529 | .92476 | .92422 |
| 113 | .92369 | .92315 | .92262 | .92209 | .92158 | .92104 | .92051 | .91999 | .91946 | .91894 |
| 114 | .91842 | .91790 | .91738 | .91686 | .91635 | .91583 | .91532 | .91481 | .91429 | .91379 |
| 115 | .91328 | .91277 | .91226 | .91176 | .91126 | .91075 | .91025 | .90975 | .90926 | .90876 |
| 116 | .90826 | .90777 | .90727 | .90678 | .90629 | .90580 | .90531 | .90483 | .90434 | .90385 |
| 117 | .90337 | .90289 | .90241 | .90193 | .90145 | .90097 | .90049 | .90002 | .89954 | .89907 |
| 118 | .89860 | .89813 | .89766 | .89719 | .89672 | .89626 | .89579 | .89533 | .89487 | .89441 |
| 119 | .89395 | .89349 | .89303 | .89257 | .89212 | .89166 | .89121 | .89076 | .89031 | .88986 |
| 120 | .88941 | .88896 | .88851 | .88807 | .88762 | .88718 | .88674 | .88630 | .88586 | .88542 |
| 121 | .88498 | .88455 | .88411 | .88368 | .88324 | .88281 | .88238 | .88195 | .88152 | .88110 |
| 122 | .88067 | .88024 | .87982 | .87940 | .87897 | .87855 | .87813 | .87771 | .87729 | .87688 |
| 123 | .87646 | .87605 | .87563 | .87522 | .87481 | .87440 | .87399 | .87358 | .87317 | .87277 |
| 124 | .87236 | .87196 | .87155 | .87115 | .87075 | .87035 | .86995 | .86955 | .86916 | .86876 |
| 125 | .86837 | .86797 | .86758 | .86719 | .86680 | .86641 | .86602 | .86563 | .86524 | .86486 |
| 126 | .86447 | .86409 | .86371 | .86332 | .86294 | .86256 | .86218 | .86181 | .86143 | .86105 |
| 127 | .86068 | .86030 | .85993 | .85956 | .85919 | .85882 | .85845 | .85808 | .85771 | .85735 |
| 128 | .85698 | .85662 | .85625 | .85589 | .85553 | .85517 | .85481 | .85445 | .85409 | .85374 |
| 129 | .85338 | .85303 | .85267 | .85232 | .85197 | .85162 | .85127 | .85092 | .85057 | .85022 |
| 130 | .84988 | .84953 | .84919 | .84884 | .84850 | .84816 | .84782 | .84748 | .84714 | .84680 |
| 131 | .84648 | .84613 | .84579 | .84546 | .84513 | .84479 | .84446 | .84413 | .84380 | .84347 |
| 132 | .84314 | .84282 | .84249 | .84216 | .84184 | .84152 | .84119 | .84087 | .84055 | .84023 |
| 133 | .83991 | .83959 | .83928 | .83896 | .83864 | .83833 | .83802 | .83770 | .83739 | .83708 |
| 134 | .83677 | .83646 | .83615 | .83584 | .83554 | .83523 | .83492 | .83462 | .83432 | .83401 |
| 135 | .83371 | .83341 | .83311 | .83281 | .83251 | .83222 | .83192 | .83162 | .83133 | .83103 |
| 136 | .83074 | .83045 | .83016 | .82987 | .82958 | .82929 | .82900 | .82871 | .82842 | .82814 |
| 137 | .82785 | .82757 | .82729 | .82700 | .82672 | .82644 | .82616 | .82588 | .82560 | .82533 |
| 138 | .82505 | .82477 | .82450 | .82422 | .82395 | .82368 | .82341 | .82313 | .82286 | .82259 |
| 139 | .82233 | .82206 | .82179 | .82152 | .82126 | .82099 | .82073 | .82047 | .82021 | .81994 |
| 140 | .81968 | .81942 | .81916 | .81891 | .81865 | .81839 | .81813 | .81788 | .81763 | .81737 |
| 141 | .81712 | .81687 | .81662 | .81636 | .81611 | .81587 | .81562 | .81537 | .81512 | .81488 |
| 142 | .81463 | .81439 | .81414 | .81390 | .81366 | .81342 | .81318 | .81294 | .81270 | .81246 |
| 143 | .81222 | .81199 | .81175 | .81151 | .81128 | .81105 | .81081 | .81058 | .81035 | .81012 |
| 144 | .80989 | .80966 | .80943 | .80920 | .80898 | .80875 | .80852 | .80830 | .80808 | .80785 |
| 145 | .80763 | .80741 | .80719 | .80697 | .80675 | .80653 | .80631 | .80609 | .80588 | .80566 |
| 146 | .80544 | .80523 | .80502 | .80480 | .80459 | .80438 | .80417 | .80398 | .80375 | .80354 |
| 147 | .80333 | .80312 | .80292 | .80271 | .80251 | .80230 | .80210 | .80190 | .80169 | .80149 |
| 148 | .80129 | .80109 | .80089 | .80069 | .80049 | .80030 | .80010 | .79990 | .79971 | .79951 |
| 149 | .79932 | .79913 | .79894 | .79874 | .79855 | .79836 | .79817 | .79798 | .79780 | .79761 |

COPPER -K α_1 ; $\lambda = 1.54050 \text{ \AA}$ —Continued

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 150 | .79742 | .79724 | .79705 | .79687 | .79668 | .79650 | .79632 | .79613 | .79595 | .79577 |
| 151 | .79559 | .79541 | .79523 | .79506 | .79488 | .79470 | .79453 | .79435 | .79418 | .79400 |
| 152 | .79383 | .79366 | .79349 | .79332 | .79314 | .79297 | .79281 | .79264 | .79247 | .79230 |
| 153 | .79214 | .79197 | .79181 | .79164 | .79148 | .79132 | .79115 | .79099 | .79083 | .79067 |
| 154 | .79051 | .79035 | .79019 | .79004 | .78988 | .78972 | .78957 | .78941 | .78926 | .78910 |
| 155 | .78895 | .78880 | .78865 | .78850 | .78835 | .78820 | .78805 | .78790 | .78775 | .78760 |
| 156 | .78746 | .78731 | .78717 | .78702 | .78688 | .78674 | .78659 | .78645 | .78631 | .78617 |
| 157 | .78603 | .78589 | .78575 | .78561 | .78548 | .78534 | .78520 | .78507 | .78493 | .78480 |
| 158 | .78467 | .78453 | .78440 | .78427 | .78414 | .78401 | .78388 | .78375 | .78362 | .78349 |
| 159 | .78337 | .78324 | .78312 | .78299 | .78287 | .78274 | .78262 | .78250 | .78237 | .78225 |
| 160 | .78213 | .78201 | .78189 | .78177 | .78166 | .78154 | .78142 | .78131 | .78119 | .78107 |
| 161 | .78096 | .78085 | .78073 | .78062 | .78051 | .78040 | .78029 | .78018 | .78007 | .77996 |
| 162 | .77985 | .77974 | .77964 | .77953 | .77943 | .77932 | .77922 | .77911 | .77901 | .77891 |
| 163 | .77880 | .77870 | .77860 | .77850 | .77840 | .77830 | .77821 | .77811 | .77801 | .77792 |
| 164 | .77782 | .77772 | .77763 | .77754 | .77744 | .77735 | .77726 | .77717 | .77708 | .77699 |
| 165 | .77690 | .77681 | .77672 | .77663 | .77654 | .77646 | .77637 | .77629 | .77620 | .77612 |
| 166 | .77603 | .77595 | .77587 | .77579 | .77571 | .77563 | .77555 | .77547 | .77539 | .77531 |
| 167 | .77523 | .77516 | .77508 | .77500 | .77493 | .77486 | .77478 | .77471 | .77464 | .77456 |
| 168 | .77449 | .77442 | .77435 | .77428 | .77421 | .77415 | .77408 | .77401 | .77394 | .77388 |
| 169 | .77381 | .77375 | .77368 | .77362 | .77356 | .77349 | .77343 | .77337 | .77331 | .77325 |
| 170 | .77319 | .77313 | .77308 | .77302 | .77296 | .77290 | .77285 | .77279 | .77274 | .77269 |
| 171 | .77263 | .77258 | .77253 | .77248 | .77242 | .77237 | .77232 | .77227 | .77223 | .77218 |
| 172 | .77213 | .77208 | .77204 | .77199 | .77195 | .77190 | .77186 | .77182 | .77177 | .77173 |
| 173 | .77169 | .77165 | .77161 | .77157 | .77153 | .77149 | .77145 | .77142 | .77138 | .77134 |
| 174 | .77131 | .77127 | .77124 | .77120 | .77117 | .77114 | .77111 | .77107 | .77104 | .77101 |
| 175 | .77098 | .77095 | .77093 | .77090 | .77087 | .77084 | .77082 | .77079 | .77077 | .77074 |

COPPER - $K\alpha_2$; $\lambda = 1.54434 \text{ \AA}$

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 90 | 1.0920 | 1.0911 | 1.0901 | 1.0892 | 1.0882 | 1.0873 | 1.0863 | 1.0854 | 1.0845 | 1.0835 |
| 91 | 1.0826 | 1.0817 | 1.0808 | 1.0798 | 1.0789 | 1.0780 | 1.0771 | 1.0762 | 1.0753 | 1.0743 |
| 92 | 1.0734 | 1.0725 | 1.0716 | 1.0707 | 1.0698 | 1.0689 | 1.0681 | 1.0672 | 1.0663 | 1.0654 |
| 93 | 1.0645 | 1.0636 | 1.0628 | 1.0619 | 1.0610 | 1.0601 | 1.0593 | 1.0584 | 1.0575 | 1.0567 |
| 94 | 1.0558 | 1.0550 | 1.0541 | 1.0532 | 1.0524 | 1.0515 | 1.0507 | 1.0498 | 1.0490 | 1.0482 |
| 95 | 1.0473 | 1.0465 | 1.0457 | 1.0448 | 1.0440 | 1.0432 | 1.0423 | 1.0415 | 1.0407 | 1.0399 |
| 96 | 1.0391 | 1.0382 | 1.0374 | 1.0366 | 1.0358 | 1.0350 | 1.0342 | 1.0334 | 1.0326 | 1.0318 |
| 97 | 1.0310 | 1.0302 | 1.0294 | 1.0286 | 1.0278 | 1.0270 | 1.0263 | 1.0255 | 1.0247 | 1.0239 |
| 98 | 1.0231 | 1.0224 | 1.0216 | 1.0208 | 1.0200 | 1.0193 | 1.0185 | 1.0177 | 1.0170 | 1.0162 |
| 99 | 1.0155 | 1.0147 | 1.0140 | 1.0132 | 1.0125 | 1.0117 | 1.0110 | 1.0102 | 1.0095 | 1.0087 |
| 100 | 1.0080 | 1.0073 | 1.0065 | 1.0058 | 1.0051 | 1.0043 | 1.0036 | 1.0029 | 1.0022 | 1.0014 |
| 101 | 1.0007 | .99999 | .99927 | .99856 | .99784 | .99713 | .99642 | .99571 | .99500 | .99430 |
| 102 | .99360 | .99290 | .99220 | .99150 | .99080 | .99011 | .98942 | .98872 | .98804 | .98735 |
| 103 | .98666 | .98598 | .98530 | .98462 | .98394 | .98326 | .98258 | .98191 | .98124 | .98057 |
| 104 | .97990 | .97923 | .97856 | .97790 | .97724 | .97658 | .97592 | .97526 | .97461 | .97395 |
| 105 | .97330 | .97265 | .97200 | .97135 | .97070 | .97006 | .96942 | .96878 | .96814 | .96750 |
| 106 | .96686 | .96623 | .96559 | .96496 | .96433 | .96370 | .96307 | .96245 | .96183 | .96120 |
| 107 | .96058 | .95996 | .95934 | .95873 | .95811 | .95750 | .95689 | .95628 | .95567 | .95506 |
| 108 | .95445 | .95385 | .95325 | .95265 | .95205 | .95145 | .95085 | .95025 | .94966 | .94907 |
| 109 | .94848 | .94789 | .94730 | .94671 | .94613 | .94554 | .94496 | .94438 | .94380 | .94322 |
| 110 | .94265 | .94207 | .94150 | .94092 | .94035 | .93978 | .93922 | .93865 | .93808 | .93752 |
| 111 | .93696 | .93639 | .93583 | .93528 | .93472 | .93416 | .93361 | .93306 | .93250 | .93195 |
| 112 | .93141 | .93086 | .93031 | .92977 | .92922 | .92868 | .92814 | .92760 | .92706 | .92653 |
| 113 | .92599 | .92546 | .92492 | .92439 | .92386 | .92333 | .92280 | .92228 | .92175 | .92123 |
| 114 | .92071 | .92019 | .91967 | .91915 | .91863 | .91811 | .91760 | .91709 | .91657 | .91606 |
| 115 | .91555 | .91505 | .91454 | .91403 | .91353 | .91302 | .91252 | .91202 | .91152 | .91102 |
| 116 | .91053 | .91003 | .90954 | .90904 | .90855 | .90806 | .90757 | .90708 | .90659 | .90611 |
| 117 | .90562 | .90514 | .90466 | .90417 | .90369 | .90322 | .90274 | .90226 | .90179 | .90131 |
| 118 | .90084 | .90037 | .89990 | .89943 | .89896 | .89849 | .89803 | .89756 | .89710 | .89664 |
| 119 | .89617 | .89571 | .89526 | .89480 | .89434 | .89389 | .89343 | .89298 | .89253 | .89207 |
| 120 | .89163 | .89118 | .89073 | .89028 | .88984 | .88939 | .88895 | .88851 | .88807 | .88763 |
| 121 | .88719 | .88675 | .88632 | .88588 | .88545 | .88501 | .88458 | .88415 | .88372 | .88329 |
| 122 | .88286 | .88244 | .88201 | .88159 | .88116 | .88074 | .88032 | .87990 | .87948 | .87906 |
| 123 | .87865 | .87823 | .87782 | .87740 | .87699 | .87658 | .87617 | .87576 | .87535 | .87494 |
| 124 | .87454 | .87413 | .87373 | .87332 | .87292 | .87252 | .87212 | .87172 | .87132 | .87093 |
| 125 | .87053 | .87014 | .86974 | .86935 | .86896 | .86857 | .86818 | .86779 | .86740 | .86701 |
| 126 | .86663 | .86624 | .86586 | .86548 | .86509 | .86471 | .86433 | .86395 | .86358 | .86320 |
| 127 | .86282 | .86245 | .86207 | .86170 | .86133 | .86096 | .86059 | .86022 | .85985 | .85948 |
| 128 | .85912 | .85875 | .85839 | .85803 | .85766 | .85730 | .85694 | .85658 | .85622 | .85587 |
| 129 | .85551 | .85515 | .85480 | .85445 | .85409 | .85374 | .85339 | .85304 | .85269 | .85234 |
| 130 | .85200 | .85165 | .85130 | .85096 | .85062 | .85027 | .84993 | .84959 | .84925 | .84891 |
| 131 | .84857 | .84824 | .84790 | .84757 | .84723 | .84690 | .84657 | .84623 | .84590 | .84557 |
| 132 | .84525 | .84492 | .84459 | .84426 | .84394 | .84361 | .84329 | .84297 | .84265 | .84233 |
| 133 | .84201 | .84169 | .84137 | .84105 | .84073 | .84042 | .84010 | .83979 | .83948 | .83917 |
| 134 | .83885 | .83854 | .83824 | .83793 | .83762 | .83731 | .83701 | .83670 | .83640 | .83609 |
| 135 | .83579 | .83549 | .83519 | .83489 | .83459 | .83429 | .83399 | .83370 | .83340 | .83311 |
| 136 | .83281 | .83252 | .83223 | .83194 | .83164 | .83135 | .83107 | .83078 | .83049 | .83020 |
| 137 | .82992 | .82963 | .82935 | .82907 | .82878 | .82850 | .82822 | .82794 | .82766 | .82738 |
| 138 | .82711 | .82683 | .82655 | .82628 | .82600 | .82573 | .82546 | .82519 | .82492 | .82465 |
| 139 | .82438 | .82411 | .82384 | .82357 | .82331 | .82304 | .82278 | .82251 | .82225 | .82199 |
| 140 | .82173 | .82147 | .82121 | .82095 | .82069 | .82043 | .82017 | .81992 | .81966 | .81941 |
| 141 | .81916 | .81890 | .81865 | .81840 | .81815 | .81790 | .81765 | .81740 | .81716 | .81691 |
| 142 | .81666 | .81642 | .81617 | .81593 | .81569 | .81545 | .81520 | .81496 | .81472 | .81449 |
| 143 | .81425 | .81401 | .81377 | .81354 | .81330 | .81307 | .81283 | .81260 | .81237 | .81214 |
| 144 | .81191 | .81168 | .81145 | .81122 | .81099 | .81077 | .81054 | .81031 | .81009 | .80987 |
| 145 | .80964 | .80942 | .80920 | .80898 | .80876 | .80854 | .80832 | .80810 | .80788 | .80767 |
| 146 | .80745 | .80724 | .80702 | .80681 | .80660 | .80638 | .80617 | .80596 | .80575 | .80554 |
| 147 | .80533 | .80513 | .80492 | .80471 | .80451 | .80430 | .80410 | .80389 | .80369 | .80349 |
| 148 | .80329 | .80309 | .80289 | .80269 | .80249 | .80229 | .80209 | .80190 | .80170 | .80151 |
| 149 | .80131 | .80112 | .80093 | .80073 | .80054 | .80035 | .80016 | .79997 | .79978 | .79960 |

COPPER - $K\alpha_2$; $\lambda = 1.54434 \text{ \AA}$ —Continued

| .20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 150 | .79941 | .79922 | .79904 | .79885 | .79867 | .79848 | .79830 | .79812 | .79794 | .79776 |
| 151 | .79757 | .79739 | .79722 | .79704 | .79686 | .79668 | .79651 | .79633 | .79616 | .79598 |
| 152 | .79581 | .79564 | .79546 | .79529 | .79512 | .79495 | .79478 | .79461 | .79445 | .79428 |
| 153 | .79411 | .79395 | .79378 | .79362 | .79345 | .79329 | .79313 | .79296 | .79280 | .79264 |
| 154 | .79248 | .79232 | .79216 | .79201 | .79185 | .79169 | .79154 | .79138 | .79123 | .79107 |
| 155 | .79092 | .79077 | .79061 | .79046 | .79031 | .79016 | .79001 | .78986 | .78971 | .78957 |
| 156 | .78942 | .78927 | .78913 | .78898 | .78884 | .78870 | .78855 | .78841 | .78827 | .78813 |
| 157 | .78799 | .78785 | .78771 | .78757 | .78743 | .78730 | .78716 | .78703 | .78689 | .78676 |
| 158 | .78662 | .78649 | .78636 | .78623 | .78609 | .78596 | .78583 | .78570 | .78558 | .78545 |
| 159 | .78532 | .78519 | .78507 | .78494 | .78482 | .78469 | .78457 | .78445 | .78432 | .78420 |
| 160 | .78408 | .78396 | .78384 | .78372 | .78360 | .78349 | .78337 | .78325 | .78314 | .78302 |
| 161 | .78291 | .78279 | .78268 | .78257 | .78245 | .78234 | .78223 | .78212 | .78201 | .78190 |
| 162 | .78180 | .78169 | .78158 | .78147 | .78137 | .78126 | .78116 | .78105 | .78095 | .78085 |
| 163 | .78075 | .78064 | .78054 | .78044 | .78034 | .78024 | .78015 | .78005 | .77995 | .77985 |
| 164 | .77976 | .77966 | .77957 | .77947 | .77938 | .77929 | .77920 | .77910 | .77901 | .77892 |
| 165 | .77883 | .77874 | .77866 | .77857 | .77848 | .77839 | .77831 | .77822 | .77814 | .77805 |
| 166 | .77797 | .77789 | .77780 | .77772 | .77764 | .77756 | .77748 | .77740 | .77732 | .77724 |
| 167 | .77717 | .77709 | .77701 | .77694 | .77686 | .77679 | .77671 | .77664 | .77657 | .77649 |
| 168 | .77642 | .77635 | .77628 | .77621 | .77614 | .77607 | .77601 | .77594 | .77587 | .77581 |
| 169 | .77574 | .77568 | .77561 | .77555 | .77549 | .77542 | .77536 | .77530 | .77524 | .77518 |
| 170 | .77512 | .77506 | .77500 | .77494 | .77489 | .77483 | .77478 | .77472 | .77467 | .77461 |
| 171 | .77456 | .77450 | .77445 | .77440 | .77435 | .77430 | .77425 | .77420 | .77415 | .77410 |
| 172 | .77406 | .77401 | .77396 | .77392 | .77387 | .77383 | .77378 | .77374 | .77370 | .77365 |
| 173 | .77361 | .77357 | .77353 | .77349 | .77345 | .77341 | .77338 | .77334 | .77330 | .77327 |
| 174 | .77323 | .77319 | .77316 | .77313 | .77309 | .77306 | .77303 | .77300 | .77297 | .77294 |
| 175 | .77291 | .77288 | .77285 | .77282 | .77279 | .77277 | .77274 | .77271 | .77269 | .77266 |

IRON - K α ; $\lambda = 1.9373 \text{ \AA}$

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2 | 55.502 | 52.859 | 50.457 | 48.263 | 46.253 | 44.403 | 42.695 | 41.114 | 39.646 | 38.279 |
| 3 | 37.004 | 35.810 | 34.691 | 33.640 | 32.651 | 31.719 | 30.838 | 30.005 | 29.215 | 28.466 |
| 4 | 27.755 | 27.078 | 26.434 | 25.820 | 25.233 | 24.673 | 24.136 | 23.623 | 23.181 | 22.660 |
| 5 | 22.207 | 21.771 | 21.353 | 20.950 | 20.563 | 20.189 | 19.829 | 19.481 | 19.146 | 18.822 |
| 6 | 18.508 | 18.205 | 17.912 | 17.628 | 17.352 | 17.086 | 16.827 | 16.576 | 16.333 | 16.096 |
| 7 | 15.867 | 15.644 | 15.427 | 15.215 | 15.010 | 14.810 | 14.616 | 14.426 | 14.242 | 14.062 |
| 8 | 13.886 | 13.715 | 13.548 | 13.385 | 13.226 | 13.071 | 12.919 | 12.771 | 12.626 | 12.484 |
| 9 | 12.346 | 12.210 | 12.078 | 11.948 | 11.822 | 11.697 | 11.576 | 11.457 | 11.340 | 11.226 |
| 10 | 11.114 | 11.004 | 10.897 | 10.791 | 10.688 | 10.586 | 10.486 | 10.389 | 10.293 | 10.199 |
| 11 | 10.106 | 10.015 | 9.9263 | 9.8388 | 9.7527 | 9.6682 | 9.5852 | 9.5035 | 9.4233 | 9.3444 |
| 12 | 9.2668 | 9.1905 | 9.1154 | 9.0416 | 8.9689 | 8.8975 | 8.8271 | 8.7579 | 8.6898 | 8.6227 |
| 13 | 8.5566 | 8.4916 | 8.4276 | 8.3645 | 8.3023 | 8.2411 | 8.1808 | 8.1214 | 8.0628 | 8.0051 |
| 14 | 7.9482 | 7.8921 | 7.8368 | 7.7823 | 7.7285 | 7.6755 | 7.6232 | 7.5716 | 7.5208 | 7.4706 |
| 15 | 7.4210 | 7.3722 | 7.3240 | 7.2764 | 7.2294 | 7.1830 | 7.1373 | 7.0921 | 7.0475 | 7.0035 |
| 16 | 6.9600 | 6.9170 | 6.8746 | 6.8327 | 6.7913 | 6.7505 | 6.7101 | 6.6702 | 6.6308 | 6.5918 |
| 17 | 6.5533 | 6.5153 | 6.4777 | 6.4405 | 6.4038 | 6.3675 | 6.3318 | 6.2961 | 6.2610 | 6.2263 |
| 18 | 6.1920 | 6.1581 | 6.1245 | 6.0913 | 6.0585 | 6.0260 | 5.9939 | 5.9621 | 5.9307 | 5.8996 |
| 19 | 5.8689 | 5.8384 | 5.8083 | 5.7785 | 5.7490 | 5.7198 | 5.6909 | 5.6623 | 5.6340 | 5.6059 |
| 20 | 5.5782 | 5.5507 | 5.5235 | 5.4966 | 5.4699 | 5.4435 | 5.4174 | 5.3915 | 5.3659 | 5.3405 |
| 21 | 5.3153 | 5.2904 | 5.2657 | 5.2413 | 5.2171 | 5.1931 | 5.1694 | 5.1458 | 5.1225 | 5.0994 |
| 22 | 5.0765 | 5.0538 | 5.0313 | 5.0090 | 4.9870 | 4.9651 | 4.9434 | 4.9219 | 4.9006 | 4.8795 |
| 23 | 4.8586 | 4.8378 | 4.8172 | 4.7968 | 4.7766 | 4.7566 | 4.7367 | 4.7170 | 4.6975 | 4.6781 |
| 24 | 4.6589 | 4.6399 | 4.6210 | 4.6022 | 4.5837 | 4.5652 | 4.5470 | 4.5288 | 4.5109 | 4.4930 |
| 25 | 4.4753 | 4.4578 | 4.4404 | 4.4231 | 4.4060 | 4.3890 | 4.3721 | 4.3554 | 4.3388 | 4.3223 |
| 26 | 4.3060 | 4.2898 | 4.2737 | 4.2577 | 4.2419 | 4.2262 | 4.2106 | 4.1951 | 4.1797 | 4.1645 |
| 27 | 4.1493 | 4.1343 | 4.1194 | 4.1046 | 4.0899 | 4.0753 | 4.0608 | 4.0464 | 4.0322 | 4.0180 |
| 28 | 4.0039 | 3.9900 | 3.9761 | 3.9623 | 3.9487 | 3.9351 | 3.9216 | 3.9083 | 3.8950 | 3.8818 |
| 29 | 3.8687 | 3.8557 | 3.8428 | 3.8299 | 3.8172 | 3.8045 | 3.7920 | 3.7795 | 3.7671 | 3.7548 |
| 30 | 3.7425 | 3.7304 | 3.7183 | 3.7063 | 3.6944 | 3.6826 | 3.6709 | 3.6592 | 3.6476 | 3.6361 |
| 31 | 3.6246 | 3.6133 | 3.6020 | 3.5907 | 3.5796 | 3.5685 | 3.5575 | 3.5466 | 3.5357 | 3.5249 |
| 32 | 3.5142 | 3.5035 | 3.4929 | 3.4824 | 3.4719 | 3.4615 | 3.4512 | 3.4409 | 3.4307 | 3.4206 |
| 33 | 3.4105 | 3.4005 | 3.3905 | 3.3807 | 3.3708 | 3.3610 | 3.3513 | 3.3417 | 3.3321 | 3.3225 |
| 34 | 3.3130 | 3.3036 | 3.2942 | 3.2849 | 3.2757 | 3.2665 | 3.2573 | 3.2482 | 3.2392 | 3.2302 |
| 35 | 3.2212 | 3.2123 | 3.2035 | 3.1947 | 3.1860 | 3.1773 | 3.1686 | 3.1601 | 3.1515 | 3.1430 |
| 36 | 3.1346 | 3.1262 | 3.1178 | 3.1095 | 3.1013 | 3.0931 | 3.0849 | 3.0768 | 3.0687 | 3.0607 |
| 37 | 3.0527 | 3.0448 | 3.0369 | 3.0290 | 3.0212 | 3.0134 | 3.0057 | 2.9980 | 2.9904 | 2.9828 |
| 38 | 2.9752 | 2.9677 | 2.9602 | 2.9528 | 2.9454 | 2.9380 | 2.9307 | 2.9234 | 2.9162 | 2.9090 |
| 39 | 2.9018 | 2.8947 | 2.8876 | 2.8805 | 2.8735 | 2.8665 | 2.8596 | 2.8526 | 2.8458 | 2.8389 |
| 40 | 2.8321 | 2.8253 | 2.8186 | 2.8119 | 2.8052 | 2.7986 | 2.7920 | 2.7854 | 2.7789 | 2.7724 |
| 41 | 2.7659 | 2.7595 | 2.7531 | 2.7467 | 2.7403 | 2.7340 | 2.7277 | 2.7215 | 2.7153 | 2.7091 |
| 42 | 2.7029 | 2.6968 | 2.6907 | 2.6846 | 2.6786 | 2.6726 | 2.6666 | 2.6606 | 2.6547 | 2.6488 |
| 43 | 2.6429 | 2.6371 | 2.6313 | 2.6255 | 2.6197 | 2.6140 | 2.6083 | 2.6026 | 2.5970 | 2.5914 |
| 44 | 2.5858 | 2.5802 | 2.5746 | 2.5691 | 2.5636 | 2.5582 | 2.5527 | 2.5473 | 2.5419 | 2.5365 |
| 45 | 2.5312 | 2.5259 | 2.5206 | 2.5153 | 2.5100 | 2.5048 | 2.4996 | 2.4944 | 2.4893 | 2.4842 |
| 46 | 2.4790 | 2.4740 | 2.4689 | 2.4639 | 2.4588 | 2.4538 | 2.4489 | 2.4439 | 2.4390 | 2.4341 |
| 47 | 2.4292 | 2.4243 | 2.4195 | 2.4147 | 2.4099 | 2.4051 | 2.4003 | 2.3956 | 2.3909 | 2.3862 |
| 48 | 2.3815 | 2.3768 | 2.3722 | 2.3676 | 2.3630 | 2.3584 | 2.3538 | 2.3493 | 2.3448 | 2.3403 |
| 49 | 2.3358 | 2.3313 | 2.3289 | 2.3225 | 2.3181 | 2.3137 | 2.3093 | 2.3049 | 2.3006 | 2.2963 |
| 50 | 2.2920 | 2.2877 | 2.2835 | 2.2792 | 2.2750 | 2.2708 | 2.2666 | 2.2624 | 2.2582 | 2.2541 |
| 51 | 2.2500 | 2.2459 | 2.2418 | 2.2377 | 2.2336 | 2.2296 | 2.2256 | 2.2216 | 2.2176 | 2.2136 |
| 52 | 2.2096 | 2.2057 | 2.2018 | 2.1978 | 2.1939 | 2.1901 | 2.1862 | 2.1823 | 2.1785 | 2.1747 |
| 53 | 2.1709 | 2.1671 | 2.1633 | 2.1595 | 2.1558 | 2.1521 | 2.1483 | 2.1446 | 2.1409 | 2.1373 |
| 54 | 2.1336 | 2.1300 | 2.1263 | 2.1227 | 2.1191 | 2.1155 | 2.1119 | 2.1084 | 2.1048 | 2.1013 |
| 55 | 2.0978 | 2.0943 | 2.0908 | 2.0873 | 2.0838 | 2.0803 | 2.0769 | 2.0735 | 2.0701 | 2.0666 |
| 56 | 2.0633 | 2.0599 | 2.0565 | 2.0532 | 2.0498 | 2.0465 | 2.0432 | 2.0399 | 2.0366 | 2.0333 |
| 57 | 2.0300 | 2.0268 | 2.0235 | 2.0203 | 2.0171 | 2.0139 | 2.0107 | 2.0075 | 2.0043 | 2.0011 |
| 58 | 1.9980 | 1.9948 | 1.9917 | 1.9886 | 1.9855 | 1.9824 | 1.9793 | 1.9762 | 1.9732 | 1.9701 |
| 59 | 1.9671 | 1.9641 | 1.9610 | 1.9580 | 1.9550 | 1.9521 | 1.9491 | 1.9461 | 1.9432 | 1.9402 |
| 60 | 1.9373 | 1.9344 | 1.9314 | 1.9285 | 1.9256 | 1.9228 | 1.9199 | 1.9170 | 1.9142 | 1.9113 |

IRON - K α ; $\lambda = 1.9373 \text{ \AA}$ —Continued

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 61 | 1.9085 | 1.9057 | 1.9029 | 1.9001 | 1.8973 | 1.8945 | 1.8917 | 1.8890 | 1.8862 | 1.8835 |
| 62 | 1.8807 | 1.8780 | 1.8753 | 1.8726 | 1.8699 | 1.8672 | 1.8645 | 1.8618 | 1.8592 | 1.8565 |
| 63 | 1.8539 | 1.8512 | 1.8486 | 1.8460 | 1.8434 | 1.8408 | 1.8382 | 1.8356 | 1.8330 | 1.8305 |
| 64 | 1.8279 | 1.8254 | 1.8228 | 1.8203 | 1.8178 | 1.8152 | 1.8127 | 1.8102 | 1.8077 | 1.8053 |
| 65 | 1.8028 | 1.8003 | 1.7979 | 1.7954 | 1.7930 | 1.7905 | 1.7881 | 1.7857 | 1.7833 | 1.7809 |
| 66 | 1.7785 | 1.7761 | 1.7737 | 1.7714 | 1.7690 | 1.7666 | 1.7643 | 1.7620 | 1.7596 | 1.7573 |
| 67 | 1.7550 | 1.7527 | 1.7504 | 1.7481 | 1.7458 | 1.7435 | 1.7412 | 1.7390 | 1.7367 | 1.7345 |
| 68 | 1.7322 | 1.7300 | 1.7277 | 1.7255 | 1.7233 | 1.7211 | 1.7189 | 1.7167 | 1.7145 | 1.7123 |
| 69 | 1.7102 | 1.7080 | 1.7058 | 1.7037 | 1.7015 | 1.6994 | 1.6972 | 1.6951 | 1.6930 | 1.6909 |
| 70 | 1.6888 | 1.6867 | 1.6846 | 1.6825 | 1.6804 | 1.6783 | 1.6763 | 1.6742 | 1.6721 | 1.6701 |
| 71 | 1.6680 | 1.6660 | 1.6640 | 1.6620 | 1.6599 | 1.6579 | 1.6559 | 1.6539 | 1.6519 | 1.6499 |
| 72 | 1.6479 | 1.6460 | 1.6440 | 1.6420 | 1.6401 | 1.6381 | 1.6362 | 1.6342 | 1.6323 | 1.6304 |
| 73 | 1.6285 | 1.6265 | 1.6246 | 1.6227 | 1.6208 | 1.6189 | 1.6170 | 1.6151 | 1.6133 | 1.6114 |
| 74 | 1.6095 | 1.6077 | 1.6058 | 1.6040 | 1.6021 | 1.6003 | 1.5984 | 1.5966 | 1.5948 | 1.5930 |
| 75 | 1.5912 | 1.5894 | 1.5876 | 1.5858 | 1.5840 | 1.5822 | 1.5804 | 1.5786 | 1.5769 | 1.5751 |
| 76 | 1.5733 | 1.5716 | 1.5698 | 1.5681 | 1.5663 | 1.5646 | 1.5629 | 1.5612 | 1.5594 | 1.5577 |
| 77 | 1.5560 | 1.5543 | 1.5526 | 1.5509 | 1.5492 | 1.5475 | 1.5459 | 1.5442 | 1.5425 | 1.5408 |
| 78 | 1.5392 | 1.5375 | 1.5359 | 1.5342 | 1.5326 | 1.5309 | 1.5293 | 1.5277 | 1.5261 | 1.5244 |
| 79 | 1.5228 | 1.5212 | 1.5196 | 1.5180 | 1.5164 | 1.5148 | 1.5132 | 1.5117 | 1.5101 | 1.5085 |
| 80 | 1.5069 | 1.5054 | 1.5038 | 1.5023 | 1.5007 | 1.4992 | 1.4976 | 1.4961 | 1.4945 | 1.4930 |
| 81 | 1.4915 | 1.4900 | 1.4884 | 1.4869 | 1.4854 | 1.4839 | 1.4824 | 1.4809 | 1.4794 | 1.4779 |
| 82 | 1.4765 | 1.4750 | 1.4735 | 1.4720 | 1.4706 | 1.4691 | 1.4676 | 1.4662 | 1.4647 | 1.4633 |
| 83 | 1.4618 | 1.4604 | 1.4590 | 1.4575 | 1.4561 | 1.4547 | 1.4533 | 1.4518 | 1.4504 | 1.4490 |
| 84 | 1.4476 | 1.4462 | 1.4448 | 1.4434 | 1.4420 | 1.4406 | 1.4393 | 1.4379 | 1.4365 | 1.4351 |
| 85 | 1.4338 | 1.4324 | 1.4310 | 1.4297 | 1.4283 | 1.4270 | 1.4256 | 1.4243 | 1.4230 | 1.4216 |
| 86 | 1.4203 | 1.4190 | 1.4176 | 1.4163 | 1.4150 | 1.4137 | 1.4124 | 1.4111 | 1.4098 | 1.4085 |
| 87 | 1.4072 | 1.4059 | 1.4046 | 1.4033 | 1.4020 | 1.4008 | 1.3995 | 1.3982 | 1.3969 | 1.3957 |
| 88 | 1.3944 | 1.3932 | 1.3919 | 1.3906 | 1.3894 | 1.3882 | 1.3869 | 1.3857 | 1.3844 | 1.3832 |
| 89 | 1.3820 | 1.3808 | 1.3795 | 1.3783 | 1.3771 | 1.3759 | 1.3747 | 1.3735 | 1.3723 | 1.3711 |
| 90 | 1.3699 | 1.3687 | 1.3675 | 1.3663 | 1.3651 | 1.3639 | 1.3627 | 1.3616 | 1.3604 | 1.3592 |
| 91 | 1.3581 | 1.3569 | 1.3557 | 1.3546 | 1.3534 | 1.3523 | 1.3511 | 1.3500 | 1.3488 | 1.3477 |
| 92 | 1.3466 | 1.3454 | 1.3443 | 1.3432 | 1.3421 | 1.3409 | 1.3398 | 1.3387 | 1.3376 | 1.3365 |
| 93 | 1.3354 | 1.3343 | 1.3332 | 1.3321 | 1.3310 | 1.3299 | 1.3288 | 1.3277 | 1.3266 | 1.3255 |
| 94 | 1.3244 | 1.3234 | 1.3223 | 1.3212 | 1.3202 | 1.3191 | 1.3180 | 1.3170 | 1.3159 | 1.3149 |
| 95 | 1.3138 | 1.3128 | 1.3117 | 1.3107 | 1.3096 | 1.3086 | 1.3076 | 1.3065 | 1.3055 | 1.3045 |
| 96 | 1.3034 | 1.3024 | 1.3014 | 1.3004 | 1.2994 | 1.2983 | 1.2973 | 1.2963 | 1.2953 | 1.2943 |
| 97 | 1.2933 | 1.2923 | 1.2913 | 1.2903 | 1.2893 | 1.2884 | 1.2874 | 1.2864 | 1.2854 | 1.2844 |
| 98 | 1.2835 | 1.2825 | 1.2815 | 1.2806 | 1.2796 | 1.2786 | 1.2777 | 1.2767 | 1.2757 | 1.2748 |
| 99 | 1.2738 | 1.2729 | 1.2720 | 1.2710 | 1.2701 | 1.2691 | 1.2682 | 1.2673 | 1.2663 | 1.2654 |
| 100. | 1.2645 | 1.2635 | 1.2626 | 1.2617 | 1.2608 | 1.2599 | 1.2590 | 1.2580 | 1.2571 | 1.2562 |
| 101 | 1.2553 | 1.2544 | 1.2535 | 1.2526 | 1.2517 | 1.2508 | 1.2499 | 1.2491 | 1.2482 | 1.2473 |
| 102 | 1.2464 | 1.2455 | 1.2446 | 1.2438 | 1.2429 | 1.2420 | 1.2412 | 1.2403 | 1.2394 | 1.2386 |
| 103 | 1.2377 | 1.2368 | 1.2360 | 1.2351 | 1.2343 | 1.2334 | 1.2326 | 1.2317 | 1.2309 | 1.2301 |
| 104 | 1.2292 | 1.2284 | 1.2275 | 1.2267 | 1.2259 | 1.2251 | 1.2242 | 1.2234 | 1.2226 | 1.2218 |
| 105 | 1.2209 | 1.2201 | 1.2193 | 1.2185 | 1.2177 | 1.2169 | 1.2161 | 1.2153 | 1.2145 | 1.2137 |
| 106 | 1.2129 | 1.2121 | 1.2113 | 1.2105 | 1.2097 | 1.2089 | 1.2081 | 1.2073 | 1.2066 | 1.2058 |
| 107 | 1.2050 | 1.2042 | 1.2034 | 1.2027 | 1.2019 | 1.2011 | 1.2004 | 1.1996 | 1.1988 | 1.1981 |
| 108 | 1.1973 | 1.1965 | 1.1958 | 1.1950 | 1.1943 | 1.1935 | 1.1928 | 1.1920 | 1.1913 | 1.1905 |
| 109 | 1.1898 | 1.1891 | 1.1883 | 1.1876 | 1.1869 | 1.1861 | 1.1854 | 1.1847 | 1.1839 | 1.1832 |
| 110 | 1.1825 | 1.1818 | 1.1810 | 1.1803 | 1.1796 | 1.1789 | 1.1782 | 1.1775 | 1.1768 | 1.1761 |
| 111 | 1.1754 | 1.1746 | 1.1739 | 1.1732 | 1.1725 | 1.1719 | 1.1712 | 1.1705 | 1.1698 | 1.1691 |
| 112 | 1.1684 | 1.1677 | 1.1670 | 1.1663 | 1.1657 | 1.1650 | 1.1643 | 1.1636 | 1.1629 | 1.1623 |
| 113 | 1.1616 | 1.1609 | 1.1603 | 1.1596 | 1.1589 | 1.1583 | 1.1576 | 1.1569 | 1.1563 | 1.1556 |
| 114 | 1.1550 | 1.1543 | 1.1537 | 1.1530 | 1.1524 | 1.1517 | 1.1511 | 1.1504 | 1.1498 | 1.1491 |
| 115 | 1.1485 | 1.1479 | 1.1472 | 1.1466 | 1.1460 | 1.1453 | 1.1447 | 1.1441 | 1.1434 | 1.1428 |
| 116 | 1.1422 | 1.1416 | 1.1410 | 1.1403 | 1.1397 | 1.1391 | 1.1385 | 1.1379 | 1.1373 | 1.1367 |
| 117 | 1.1360 | 1.1354 | 1.1348 | 1.1342 | 1.1336 | 1.1330 | 1.1324 | 1.1318 | 1.1312 | 1.1306 |
| 118 | 1.1300 | 1.1295 | 1.1289 | 1.1283 | 1.1277 | 1.1271 | 1.1265 | 1.1259 | 1.1254 | 1.1248 |
| 119 | 1.1242 | 1.1236 | 1.1230 | 1.1225 | 1.1219 | 1.1213 | 1.1208 | 1.1202 | 1.1196 | 1.1191 |
| 120 | 1.1185 | 1.1179 | 1.1174 | 1.1168 | 1.1162 | 1.1157 | 1.1151 | 1.1146 | 1.1140 | 1.1135 |

IRON - K α ; $\lambda = 1.9373 \text{ \AA}$ —Continued

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 121 | 1.1129 | 1.1124 | 1.1118 | 1.1113 | 1.1107 | 1.1102 | 1.1097 | 1.1091 | 1.1086 | 1.1080 |
| 122 | 1.1075 | 1.1070 | 1.1064 | 1.1059 | 1.1054 | 1.1048 | 1.1043 | 1.1038 | 1.1033 | 1.1027 |
| 123 | 1.1022 | 1.1017 | 1.1012 | 1.1006 | 1.1001 | 1.0996 | 1.0991 | 1.0986 | 1.0981 | 1.0976 |
| 124 | 1.0971 | 1.0965 | 1.0960 | 1.0955 | 1.0950 | 1.0945 | 1.0940 | 1.0935 | 1.0930 | 1.0925 |
| 125 | 1.0920 | 1.0915 | 1.0910 | 1.0905 | 1.0901 | 1.0896 | 1.0891 | 1.0886 | 1.0881 | 1.0876 |
| 126 | 1.0871 | 1.0866 | 1.0862 | 1.0857 | 1.0852 | 1.0847 | 1.0843 | 1.0838 | 1.0833 | 1.0828 |
| 127 | 1.0824 | 1.0819 | 1.0814 | 1.0810 | 1.0805 | 1.0800 | 1.0796 | 1.0791 | 1.0786 | 1.0782 |
| 128 | 1.0777 | 1.0773 | 1.0768 | 1.0763 | 1.0759 | 1.0754 | 1.0750 | 1.0745 | 1.0741 | 1.0736 |
| 129 | 1.0732 | 1.0727 | 1.0723 | 1.0718 | 1.0714 | 1.0710 | 1.0705 | 1.0701 | 1.0696 | 1.0692 |
| 130 | 1.0688 | 1.0683 | 1.0679 | 1.0675 | 1.0670 | 1.0666 | 1.0662 | 1.0658 | 1.0653 | 1.0649 |
| 131 | 1.0645 | 1.0641 | 1.0636 | 1.0632 | 1.0628 | 1.0624 | 1.0620 | 1.0615 | 1.0611 | 1.0607 |
| 132 | 1.0603 | 1.0599 | 1.0595 | 1.0591 | 1.0587 | 1.0583 | 1.0579 | 1.0575 | 1.0570 | 1.0566 |
| 133 | 1.0562 | 1.0558 | 1.0554 | 1.0550 | 1.0547 | 1.0543 | 1.0539 | 1.0535 | 1.0531 | 1.0527 |
| 134 | 1.0523 | 1.0519 | 1.0515 | 1.0511 | 1.0507 | 1.0504 | 1.0500 | 1.0496 | 1.0492 | 1.0488 |
| 135 | 1.0484 | 1.0481 | 1.0477 | 1.0473 | 1.0469 | 1.0466 | 1.0462 | 1.0458 | 1.0455 | 1.0451 |
| 136 | 1.0447 | 1.0443 | 1.0440 | 1.0436 | 1.0432 | 1.0429 | 1.0425 | 1.0422 | 1.0418 | 1.0414 |
| 137 | 1.0411 | 1.0407 | 1.0404 | 1.0400 | 1.0397 | 1.0393 | 1.0390 | 1.0386 | 1.0383 | 1.0379 |
| 138 | 1.0376 | 1.0372 | 1.0369 | 1.0365 | 1.0362 | 1.0358 | 1.0355 | 1.0351 | 1.0348 | 1.0345 |
| 139 | 1.0341 | 1.0338 | 1.0335 | 1.0331 | 1.0328 | 1.0325 | 1.0321 | 1.0318 | 1.0315 | 1.0311 |
| 140 | 1.0308 | 1.0305 | 1.0302 | 1.0298 | 1.0295 | 1.0292 | 1.0289 | 1.0285 | 1.0282 | 1.0279 |
| 141 | 1.0276 | 1.0273 | 1.0269 | 1.0266 | 1.0263 | 1.0260 | 1.0257 | 1.0254 | 1.0251 | 1.0248 |
| 142 | 1.0244 | 1.0241 | 1.0238 | 1.0235 | 1.0232 | 1.0229 | 1.0226 | 1.0223 | 1.0220 | 1.0217 |
| 143 | 1.0214 | 1.0211 | 1.0208 | 1.0205 | 1.0202 | 1.0199 | 1.0197 | 1.0194 | 1.0191 | 1.0188 |
| 144 | 1.0185 | 1.0182 | 1.0179 | 1.0176 | 1.0173 | 1.0171 | 1.0168 | 1.0165 | 1.0162 | 1.0159 |
| 145 | 1.0156 | 1.0154 | 1.0151 | 1.0148 | 1.0145 | 1.0143 | 1.0140 | 1.0137 | 1.0134 | 1.0132 |
| 146 | 1.0129 | 1.0126 | 1.0124 | 1.0121 | 1.0118 | 1.0116 | 1.0113 | 1.0110 | 1.0108 | 1.0105 |
| 147 | 1.0102 | 1.0100 | 1.0097 | 1.0095 | 1.0092 | 1.0089 | 1.0087 | 1.0084 | 1.0082 | 1.0079 |
| 148 | 1.0077 | 1.0074 | 1.0072 | 1.0069 | 1.0067 | 1.0064 | 1.0062 | 1.0059 | 1.0057 | 1.0054 |
| 149 | 1.0052 | 1.0050 | 1.0047 | 1.0045 | 1.0042 | 1.0040 | 1.0038 | 1.0035 | 1.0033 | 1.0030 |
| 150 | 1.0028 | 1.0026 | 1.0023 | 1.0021 | 1.0019 | 1.0016 | 1.0014 | 1.0012 | 1.0010 | 1.0007 |



IRON - $K\alpha_1$; $\lambda = 1.93597 \text{ \AA}$

| 2θ | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 90 | 1.3689 | 1.3677 | 1.3666 | 1.3654 | 1.3642 | 1.3630 | 1.3618 | 1.3607 | 1.3595 | 1.3583 |
| 91 | 1.3571 | 1.3560 | 1.3548 | 1.3537 | 1.3525 | 1.3514 | 1.3502 | 1.3491 | 1.3479 | 1.3468 |
| 92 | 1.3457 | 1.3445 | 1.3434 | 1.3423 | 1.3411 | 1.3400 | 1.3389 | 1.3378 | 1.3367 | 1.3356 |
| 93 | 1.3345 | 1.3334 | 1.3323 | 1.3312 | 1.3301 | 1.3290 | 1.3279 | 1.3268 | 1.3257 | 1.3246 |
| 94 | 1.3236 | 1.3225 | 1.3214 | 1.3203 | 1.3193 | 1.3182 | 1.3171 | 1.3161 | 1.3150 | 1.3140 |
| 95 | 1.3129 | 1.3119 | 1.3108 | 1.3098 | 1.3087 | 1.3077 | 1.3067 | 1.3056 | 1.3046 | 1.3036 |
| 96 | 1.3026 | 1.3015 | 1.3005 | 1.2995 | 1.2985 | 1.2975 | 1.2965 | 1.2955 | 1.2944 | 1.2934 |
| 97 | 1.2924 | 1.2914 | 1.2905 | 1.2895 | 1.2885 | 1.2875 | 1.2865 | 1.2855 | 1.2845 | 1.2836 |
| 98 | 1.2826 | 1.2816 | 1.2807 | 1.2797 | 1.2787 | 1.2778 | 1.2768 | 1.2758 | 1.2749 | 1.2739 |
| 99 | 1.2730 | 1.2720 | 1.2711 | 1.2701 | 1.2692 | 1.2683 | 1.2673 | 1.2664 | 1.2655 | 1.2645 |
| 100 | 1.2636 | 1.2627 | 1.2618 | 1.2608 | 1.2599 | 1.2590 | 1.2581 | 1.2572 | 1.2563 | 1.2554 |
| 101 | 1.2545 | 1.2536 | 1.2527 | 1.2518 | 1.2509 | 1.2500 | 1.2491 | 1.2482 | 1.2473 | 1.2464 |
| 102 | 1.2456 | 1.2447 | 1.2438 | 1.2429 | 1.2421 | 1.2412 | 1.2403 | 1.2395 | 1.2386 | 1.2377 |
| 103 | 1.2369 | 1.2360 | 1.2352 | 1.2343 | 1.2335 | 1.2326 | 1.2318 | 1.2309 | 1.2301 | 1.2292 |
| 104 | 1.2284 | 1.2276 | 1.2267 | 1.2259 | 1.2251 | 1.2242 | 1.2234 | 1.2226 | 1.2218 | 1.2209 |
| 105 | 1.2201 | 1.2193 | 1.2185 | 1.2177 | 1.2169 | 1.2161 | 1.2153 | 1.2144 | 1.2136 | 1.2128 |
| 106 | 1.2120 | 1.2113 | 1.2105 | 1.2097 | 1.2089 | 1.2081 | 1.2073 | 1.2065 | 1.2057 | 1.2050 |
| 107 | 1.2042 | 1.2034 | 1.2026 | 1.2019 | 1.2011 | 1.2003 | 1.1995 | 1.1988 | 1.1980 | 1.1973 |
| 108 | 1.1965 | 1.1957 | 1.1950 | 1.1942 | 1.1935 | 1.1927 | 1.1920 | 1.1912 | 1.1905 | 1.1897 |
| 109 | 1.1890 | 1.1883 | 1.1875 | 1.1868 | 1.1861 | 1.1853 | 1.1846 | 1.1839 | 1.1831 | 1.1824 |
| 110 | 1.1817 | 1.1810 | 1.1803 | 1.1795 | 1.1788 | 1.1781 | 1.1774 | 1.1767 | 1.1760 | 1.1753 |
| 111 | 1.1746 | 1.1739 | 1.1732 | 1.1725 | 1.1718 | 1.1711 | 1.1704 | 1.1697 | 1.1690 | 1.1683 |
| 112 | 1.1676 | 1.1669 | 1.1662 | 1.1655 | 1.1649 | 1.1642 | 1.1635 | 1.1628 | 1.1622 | 1.1615 |
| 113 | 1.1608 | 1.1601 | 1.1595 | 1.1588 | 1.1581 | 1.1575 | 1.1568 | 1.1562 | 1.1555 | 1.1548 |
| 114 | 1.1542 | 1.1535 | 1.1529 | 1.1522 | 1.1516 | 1.1509 | 1.1503 | 1.1497 | 1.1490 | 1.1484 |
| 115 | 1.1477 | 1.1471 | 1.1465 | 1.1458 | 1.1452 | 1.1448 | 1.1439 | 1.1433 | 1.1427 | 1.1421 |
| 116 | 1.1414 | 1.1408 | 1.1402 | 1.1396 | 1.1389 | 1.1383 | 1.1377 | 1.1371 | 1.1365 | 1.1359 |
| 117 | 1.1363 | 1.1347 | 1.1341 | 1.1335 | 1.1329 | 1.1323 | 1.1317 | 1.1311 | 1.1305 | 1.1299 |
| 118 | 1.1293 | 1.1287 | 1.1281 | 1.1275 | 1.1269 | 1.1263 | 1.1258 | 1.1252 | 1.1246 | 1.1240 |
| 119 | 1.1234 | 1.1229 | 1.1223 | 1.1217 | 1.1211 | 1.1206 | 1.1200 | 1.1194 | 1.1189 | 1.1183 |
| 120 | 1.1177 | 1.1172 | 1.1166 | 1.1160 | 1.1155 | 1.1149 | 1.1144 | 1.1138 | 1.1133 | 1.1127 |
| 121 | 1.1122 | 1.1116 | 1.1111 | 1.1105 | 1.1100 | 1.1094 | 1.1089 | 1.1084 | 1.1078 | 1.1073 |
| 122 | 1.1067 | 1.1062 | 1.1057 | 1.1051 | 1.1046 | 1.1041 | 1.1036 | 1.1030 | 1.1025 | 1.1020 |
| 123 | 1.1015 | 1.1009 | 1.1004 | 1.0999 | 1.0994 | 1.0989 | 1.0984 | 1.0978 | 1.0973 | 1.0968 |
| 124 | 1.0963 | 1.0958 | 1.0953 | 1.0948 | 1.0943 | 1.0938 | 1.0933 | 1.0928 | 1.0923 | 1.0918 |
| 125 | 1.0913 | 1.0908 | 1.0903 | 1.0898 | 1.0893 | 1.0888 | 1.0883 | 1.0878 | 1.0874 | 1.0869 |
| 126 | 1.0864 | 1.0859 | 1.0854 | 1.0850 | 1.0845 | 1.0840 | 1.0835 | 1.0830 | 1.0826 | 1.0821 |
| 127 | 1.0816 | 1.0812 | 1.0807 | 1.0802 | 1.0798 | 1.0793 | 1.0788 | 1.0784 | 1.0779 | 1.0774 |
| 128 | 1.0770 | 1.0765 | 1.0761 | 1.0756 | 1.0752 | 1.0747 | 1.0743 | 1.0738 | 1.0734 | 1.0729 |
| 129 | 1.0725 | 1.0720 | 1.0716 | 1.0711 | 1.0707 | 1.0702 | 1.0698 | 1.0694 | 1.0689 | 1.0685 |
| 130 | 1.0681 | 1.0676 | 1.0672 | 1.0668 | 1.0663 | 1.0659 | 1.0655 | 1.0650 | 1.0646 | 1.0642 |
| 131 | 1.0638 | 1.0633 | 1.0629 | 1.0625 | 1.0621 | 1.0617 | 1.0612 | 1.0608 | 1.0604 | 1.0600 |
| 132 | 1.0596 | 1.0592 | 1.0588 | 1.0584 | 1.0580 | 1.0575 | 1.0571 | 1.0567 | 1.0563 | 1.0559 |
| 133 | 1.0555 | 1.0551 | 1.0547 | 1.0543 | 1.0539 | 1.0535 | 1.0531 | 1.0528 | 1.0524 | 1.0520 |
| 134 | 1.0516 | 1.0512 | 1.0508 | 1.0504 | 1.0500 | 1.0496 | 1.0493 | 1.0489 | 1.0485 | 1.0481 |
| 135 | 1.0477 | 1.0474 | 1.0470 | 1.0466 | 1.0462 | 1.0459 | 1.0455 | 1.0451 | 1.0447 | 1.0444 |
| 136 | 1.0440 | 1.0436 | 1.0433 | 1.0429 | 1.0425 | 1.0422 | 1.0418 | 1.0415 | 1.0411 | 1.0407 |
| 137 | 1.0404 | 1.0400 | 1.0397 | 1.0393 | 1.0390 | 1.0386 | 1.0382 | 1.0379 | 1.0375 | 1.0372 |
| 138 | 1.0369 | 1.0365 | 1.0362 | 1.0358 | 1.0355 | 1.0351 | 1.0348 | 1.0344 | 1.0341 | 1.0338 |
| 139 | 1.0334 | 1.0331 | 1.0328 | 1.0324 | 1.0321 | 1.0318 | 1.0314 | 1.0311 | 1.0308 | 1.0304 |
| 140 | 1.0301 | 1.0298 | 1.0295 | 1.0291 | 1.0288 | 1.0285 | 1.0282 | 1.0278 | 1.0275 | 1.0272 |
| 141 | 1.0269 | 1.0266 | 1.0263 | 1.0259 | 1.0256 | 1.0253 | 1.0250 | 1.0247 | 1.0244 | 1.0241 |
| 142 | 1.0238 | 1.0235 | 1.0231 | 1.0228 | 1.0225 | 1.0222 | 1.0219 | 1.0216 | 1.0213 | 1.0210 |
| 143 | 1.0207 | 1.0204 | 1.0201 | 1.0198 | 1.0195 | 1.0193 | 1.0190 | 1.0187 | 1.0184 | 1.0181 |
| 144 | 1.0178 | 1.0175 | 1.0172 | 1.0169 | 1.0167 | 1.0164 | 1.0161 | 1.0158 | 1.0155 | 1.0152 |
| 145 | 1.0150 | 1.0147 | 1.0144 | 1.0141 | 1.0139 | 1.0136 | 1.0133 | 1.0130 | 1.0128 | 1.0125 |
| 146 | 1.0122 | 1.0119 | 1.0117 | 1.0114 | 1.0111 | 1.0109 | 1.0106 | 1.0103 | 1.0101 | 1.0098 |
| 147 | 1.0096 | 1.0093 | 1.0090 | 1.0088 | 1.0085 | 1.0083 | 1.0080 | 1.0078 | 1.0075 | 1.0072 |
| 148 | 1.0070 | 1.0067 | 1.0065 | 1.0062 | 1.0060 | 1.0057 | 1.0055 | 1.0053 | 1.0050 | 1.0048 |
| 149 | 1.0045 | 1.0043 | 1.0040 | 1.0038 | 1.0036 | 1.0033 | 1.0031 | 1.0028 | 1.0026 | 1.0024 |

IRON - $K\alpha_1$; $\lambda = 1.93597 \text{ \AA}$ —Continued

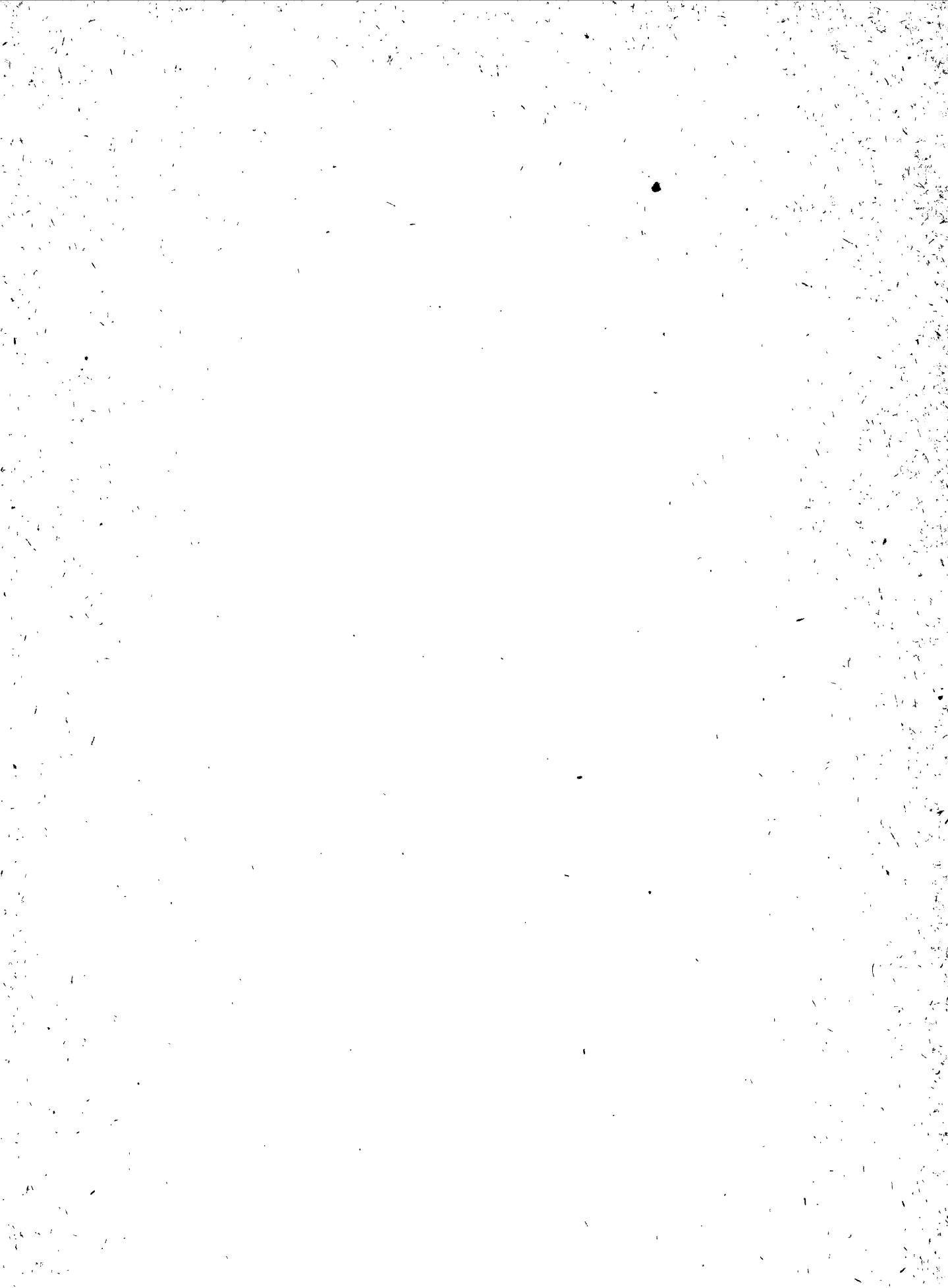
| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 150 | 1.0021 | 1.0019 | 1.0017 | 1.0014 | 1.0012 | 1.0010 | 1.0007 | 1.0005 | 1.0003 | 1.0001 |
| 151 | .99983 | .99961 | .99938 | .99916 | .99894 | .99871 | .99849 | .99827 | .99805 | .99784 |
| 152 | .99762 | .99740 | .99719 | .99697 | .99678 | .99654 | .99633 | .99612 | .99591 | .99570 |
| 153 | .99549 | .99528 | .99508 | .99487 | .99466 | .99446 | .99425 | .99405 | .99385 | .99365 |
| 154 | .99345 | .99325 | .99305 | .99285 | .99265 | .99246 | .99226 | .99207 | .99187 | .99168 |
| 155 | .99149 | .99130 | .99111 | .99092 | .99073 | .99054 | .99035 | .99016 | .98998 | .98979 |
| 156 | .98961 | .98943 | .98924 | .98906 | .98888 | .98870 | .98852 | .98835 | .98817 | .98799 |
| 157 | .98782 | .98764 | .98747 | .98729 | .98712 | .98695 | .98678 | .98661 | .98644 | .98627 |
| 158 | .98610 | .98594 | .98577 | .98560 | .98544 | .98528 | .98511 | .98495 | .98479 | .98463 |
| 159 | .98447 | .98431 | .98415 | .98400 | .98384 | .98368 | .98353 | .98338 | .98322 | .98307 |
| 160 | .98292 | .98277 | .98262 | .98247 | .98232 | .98217 | .98202 | .98188 | .98173 | .98159 |
| 161 | .98144 | .98130 | .98118 | .98102 | .98088 | .98074 | .98060 | .98046 | .98032 | .98019 |
| 162 | .98005 | .97992 | .97978 | .97965 | .97952 | .97938 | .97925 | .97912 | .97899 | .97888 |
| 163 | .97874 | .97861 | .97848 | .97836 | .97823 | .97811 | .97798 | .97786 | .97774 | .97762 |
| 164 | .97750 | .97738 | .97726 | .97714 | .97702 | .97691 | .97679 | .97668 | .97656 | .97645 |
| 165 | .97634 | .97623 | .97611 | .97600 | .97590 | .97579 | .97568 | .97557 | .97546 | .97536 |
| 166 | .97525 | .97515 | .97505 | .97494 | .97484 | .97474 | .97464 | .97454 | .97444 | .97434 |
| 167 | .97425 | .97415 | .97406 | .97396 | .97387 | .97377 | .97368 | .97359 | .97350 | .97341 |
| 168 | .97332 | .97323 | .97314 | .97305 | .97297 | .97288 | .97279 | .97271 | .97263 | .97254 |
| 169 | .97246 | .97238 | .97230 | .97222 | .97214 | .97206 | .97199 | .97191 | .97183 | .97176 |
| 170 | .97168 | .97161 | .97154 | .97146 | .97139 | .97132 | .97125 | .97118 | .97111 | .97105 |
| 171 | .97098 | .97091 | .97085 | .97078 | .97072 | .97065 | .97059 | .97053 | .97047 | .97041 |
| 172 | .97035 | .97029 | .97023 | .97017 | .97012 | .97006 | .97001 | .96995 | .96990 | .96985 |
| 173 | .96979 | .96974 | .96969 | .96964 | .96959 | .96954 | .96950 | .96945 | .96940 | .96936 |
| 174 | .96931 | .96927 | .96923 | .96918 | .96914 | .96910 | .96906 | .96902 | .96898 | .96894 |
| 175 | .96891 | .96887 | .96883 | .96880 | .96877 | .96873 | .96870 | .96867 | .96864 | .96860 |

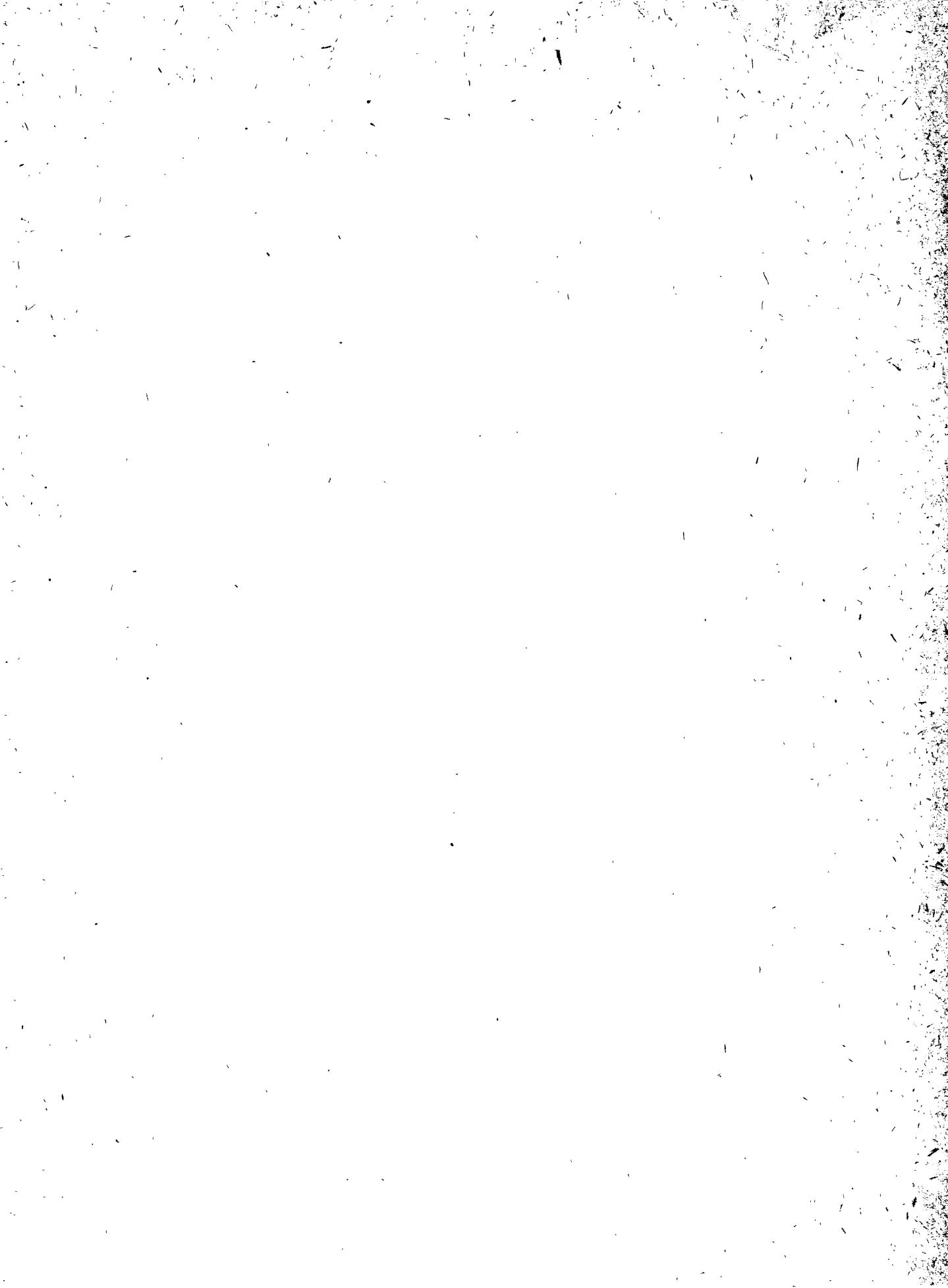
IRON - $K\alpha_2$: $\lambda = 1.93991 \text{ \AA}$

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 90 | 1.3717 | 1.3705 | 1.3693 | 1.3681 | 1.3670 | 1.3658 | 1.3646 | 1.3634 | 1.3622 | 1.3611 |
| 91 | 1.3599 | 1.3587 | 1.3576 | 1.3564 | 1.3553 | 1.3541 | 1.3530 | 1.3518 | 1.3507 | 1.3495 |
| 92 | 1.3484 | 1.3473 | 1.3461 | 1.3450 | 1.3439 | 1.3428 | 1.3416 | 1.3405 | 1.3394 | 1.3383 |
| 93 | 1.3372 | 1.3361 | 1.3350 | 1.3339 | 1.3328 | 1.3317 | 1.3306 | 1.3295 | 1.3284 | 1.3273 |
| 94 | 1.3262 | 1.3252 | 1.3241 | 1.3230 | 1.3220 | 1.3209 | 1.3198 | 1.3188 | 1.3177 | 1.3166 |
| 95 | 1.3156 | 1.3145 | 1.3135 | 1.3124 | 1.3114 | 1.3104 | 1.3093 | 1.3083 | 1.3073 | 1.3062 |
| 96 | 1.3052 | 1.3042 | 1.3032 | 1.3021 | 1.3011 | 1.3001 | 1.2991 | 1.2981 | 1.2971 | 1.2961 |
| 97 | 1.2951 | 1.2941 | 1.2931 | 1.2921 | 1.2911 | 1.2901 | 1.2891 | 1.2881 | 1.2872 | 1.2862 |
| 98 | 1.2852 | 1.2842 | 1.2833 | 1.2823 | 1.2813 | 1.2804 | 1.2794 | 1.2784 | 1.2775 | 1.2765 |
| 99 | 1.2756 | 1.2746 | 1.2737 | 1.2727 | 1.2718 | 1.2709 | 1.2699 | 1.2690 | 1.2680 | 1.2671 |
| 100 | 1.2662 | 1.2653 | 1.2643 | 1.2634 | 1.2625 | 1.2616 | 1.2607 | 1.2598 | 1.2588 | 1.2579 |
| 101 | 1.2570 | 1.2561 | 1.2552 | 1.2543 | 1.2534 | 1.2525 | 1.2516 | 1.2508 | 1.2499 | 1.2490 |
| 102 | 1.2481 | 1.2472 | 1.2463 | 1.2455 | 1.2446 | 1.2437 | 1.2428 | 1.2420 | 1.2411 | 1.2402 |
| 103 | 1.2394 | 1.2385 | 1.2377 | 1.2368 | 1.2360 | 1.2351 | 1.2343 | 1.2334 | 1.2326 | 1.2317 |
| 104 | 1.2309 | 1.2301 | 1.2292 | 1.2284 | 1.2276 | 1.2267 | 1.2259 | 1.2251 | 1.2242 | 1.2234 |
| 105 | 1.2226 | 1.2218 | 1.2210 | 1.2202 | 1.2193 | 1.2185 | 1.2177 | 1.2169 | 1.2161 | 1.2153 |
| 106 | 1.2145 | 1.2137 | 1.2129 | 1.2121 | 1.2113 | 1.2105 | 1.2098 | 1.2090 | 1.2082 | 1.2074 |
| 107 | 1.2066 | 1.2058 | 1.2051 | 1.2043 | 1.2035 | 1.2028 | 1.2020 | 1.2012 | 1.2005 | 1.1997 |
| 108 | 1.1989 | 1.1982 | 1.1974 | 1.1967 | 1.1959 | 1.1952 | 1.1944 | 1.1937 | 1.1929 | 1.1922 |
| 109 | 1.1914 | 1.1907 | 1.1899 | 1.1892 | 1.1885 | 1.1877 | 1.1870 | 1.1863 | 1.1855 | 1.1848 |
| 110 | 1.1841 | 1.1834 | 1.1827 | 1.1819 | 1.1812 | 1.1805 | 1.1798 | 1.1791 | 1.1784 | 1.1777 |
| 111 | 1.1769 | 1.1762 | 1.1755 | 1.1748 | 1.1741 | 1.1734 | 1.1727 | 1.1721 | 1.1714 | 1.1707 |
| 112 | 1.1700 | 1.1693 | 1.1686 | 1.1679 | 1.1672 | 1.1666 | 1.1659 | 1.1652 | 1.1645 | 1.1638 |
| 113 | 1.1632 | 1.1625 | 1.1618 | 1.1612 | 1.1605 | 1.1598 | 1.1592 | 1.1585 | 1.1579 | 1.1572 |
| 114 | 1.1565 | 1.1559 | 1.1552 | 1.1546 | 1.1539 | 1.1533 | 1.1526 | 1.1520 | 1.1513 | 1.1507 |
| 115 | 1.1501 | 1.1494 | 1.1488 | 1.1482 | 1.1475 | 1.1469 | 1.1463 | 1.1456 | 1.1450 | 1.1444 |
| 116 | 1.1437 | 1.1431 | 1.1425 | 1.1419 | 1.1413 | 1.1407 | 1.1400 | 1.1394 | 1.1388 | 1.1382 |
| 117 | 1.1376 | 1.1370 | 1.1364 | 1.1358 | 1.1352 | 1.1346 | 1.1340 | 1.1334 | 1.1328 | 1.1322 |
| 118 | 1.1316 | 1.1310 | 1.1304 | 1.1298 | 1.1292 | 1.1286 | 1.1280 | 1.1275 | 1.1269 | 1.1263 |
| 119 | 1.1257 | 1.1251 | 1.1246 | 1.1240 | 1.1234 | 1.1228 | 1.1223 | 1.1217 | 1.1211 | 1.1206 |
| 120 | 1.1200 | 1.1194 | 1.1189 | 1.1183 | 1.1178 | 1.1172 | 1.1166 | 1.1161 | 1.1155 | 1.1150 |
| 121 | 1.1144 | 1.1139 | 1.1133 | 1.1128 | 1.1122 | 1.1117 | 1.1112 | 1.1106 | 1.1101 | 1.1095 |
| 122 | 1.1090 | 1.1085 | 1.1079 | 1.1074 | 1.1069 | 1.1063 | 1.1058 | 1.1053 | 1.1048 | 1.1042 |
| 123 | 1.1037 | 1.1032 | 1.1027 | 1.1021 | 1.1016 | 1.1011 | 1.1006 | 1.1001 | 1.0996 | 1.0991 |
| 124 | 1.0985 | 1.0980 | 1.0975 | 1.0970 | 1.0965 | 1.0960 | 1.0955 | 1.0950 | 1.0945 | 1.0940 |
| 125 | 1.0935 | 1.0930 | 1.0925 | 1.0920 | 1.0915 | 1.0910 | 1.0906 | 1.0901 | 1.0896 | 1.0891 |
| 126 | 1.0886 | 1.0881 | 1.0876 | 1.0872 | 1.0867 | 1.0862 | 1.0857 | 1.0852 | 1.0848 | 1.0843 |
| 127 | 1.0838 | 1.0834 | 1.0829 | 1.0824 | 1.0820 | 1.0815 | 1.0810 | 1.0806 | 1.0801 | 1.0798 |
| 128 | 1.0792 | 1.0787 | 1.0783 | 1.0778 | 1.0773 | 1.0769 | 1.0764 | 1.0760 | 1.0755 | 1.0751 |
| 129 | 1.0746 | 1.0742 | 1.0737 | 1.0733 | 1.0729 | 1.0724 | 1.0720 | 1.0715 | 1.0711 | 1.0707 |
| 130 | 1.0702 | 1.0698 | 1.0694 | 1.0689 | 1.0685 | 1.0681 | 1.0676 | 1.0672 | 1.0668 | 1.0664 |
| 131 | 1.0659 | 1.0655 | 1.0651 | 1.0647 | 1.0642 | 1.0638 | 1.0634 | 1.0630 | 1.0626 | 1.0622 |
| 132 | 1.0617 | 1.0613 | 1.0609 | 1.0605 | 1.0601 | 1.0597 | 1.0593 | 1.0589 | 1.0585 | 1.0581 |
| 133 | 1.0577 | 1.0573 | 1.0569 | 1.0565 | 1.0561 | 1.0557 | 1.0553 | 1.0549 | 1.0545 | 1.0541 |
| 134 | 1.0537 | 1.0533 | 1.0529 | 1.0526 | 1.0522 | 1.0518 | 1.0514 | 1.0510 | 1.0506 | 1.0503 |
| 135 | 1.0499 | 1.0495 | 1.0491 | 1.0487 | 1.0484 | 1.0480 | 1.0476 | 1.0472 | 1.0469 | 1.0465 |
| 136 | 1.0461 | 1.0458 | 1.0454 | 1.0450 | 1.0447 | 1.0443 | 1.0439 | 1.0436 | 1.0432 | 1.0429 |
| 137 | 1.0425 | 1.0421 | 1.0418 | 1.0414 | 1.0411 | 1.0407 | 1.0404 | 1.0400 | 1.0397 | 1.0393 |
| 138 | 1.0390 | 1.0386 | 1.0383 | 1.0379 | 1.0376 | 1.0372 | 1.0369 | 1.0366 | 1.0362 | 1.0359 |
| 139 | 1.0355 | 1.0352 | 1.0349 | 1.0345 | 1.0342 | 1.0339 | 1.0335 | 1.0332 | 1.0329 | 1.0325 |
| 140 | 1.0322 | 1.0319 | 1.0316 | 1.0312 | 1.0309 | 1.0306 | 1.0303 | 1.0299 | 1.0296 | 1.0293 |
| 141 | 1.0290 | 1.0287 | 1.0283 | 1.0280 | 1.0277 | 1.0274 | 1.0271 | 1.0268 | 1.0265 | 1.0262 |
| 142 | 1.0258 | 1.0255 | 1.0252 | 1.0249 | 1.0246 | 1.0243 | 1.0240 | 1.0237 | 1.0234 | 1.0231 |
| 143 | 1.0228 | 1.0225 | 1.0222 | 1.0219 | 1.0216 | 1.0213 | 1.0210 | 1.0207 | 1.0205 | 1.0202 |
| 144 | 1.0199 | 1.0196 | 1.0193 | 1.0190 | 1.0187 | 1.0184 | 1.0182 | 1.0179 | 1.0176 | 1.0173 |
| 145 | 1.0170 | 1.0167 | 1.0165 | 1.0162 | 1.0159 | 1.0156 | 1.0154 | 1.0151 | 1.0148 | 1.0145 |
| 146 | 1.0143 | 1.0140 | 1.0137 | 1.0135 | 1.0132 | 1.0129 | 1.0127 | 1.0124 | 1.0121 | 1.0119 |
| 147 | 1.0116 | 1.0114 | 1.0111 | 1.0108 | 1.0106 | 1.0103 | 1.0101 | 1.0098 | 1.0096 | 1.0093 |
| 148 | 1.0090 | 1.0088 | 1.0085 | 1.0083 | 1.0080 | 1.0078 | 1.0075 | 1.0073 | 1.0071 | 1.0068 |
| 149 | 1.0066 | 1.0063 | 1.0061 | 1.0058 | 1.0056 | 1.0054 | 1.0051 | 1.0049 | 1.0046 | 1.0044 |

IRON - $K\alpha_2$; $\lambda = 1.93991 \text{ \AA}$ —Continued

| 20 | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 150 | 1.0042 | 1.0039 | 1.0037 | 1.0035 | 1.0032 | 1.0030 | 1.0028 | 1.0025 | 1.0023 | 1.0021 |
| 151 | 1.0019 | 1.0016 | 1.0014 | 1.0012 | 1.0010 | 1.0007 | 1.0005 | 1.0003 | 1.0001 | .99987 |
| 152 | .99965 | .99943 | .99922 | .99900 | .99879 | .99857 | .99836 | .99815 | .99794 | .99773 |
| 153 | .99752 | .99731 | .99710 | .99689 | .99669 | .99648 | .99628 | .99607 | .99587 | .99567 |
| 154 | .99547 | .99527 | .99507 | .99487 | .99467 | .99448 | .99428 | .99409 | .99389 | .99370 |
| 155 | .99351 | .99331 | .99312 | .99293 | .99274 | .99255 | .99237 | .99218 | .99199 | .99181 |
| 156 | .99162 | .99144 | .99126 | .99108 | .99090 | .99071 | .99054 | .99036 | .99018 | .99000 |
| 157 | .98983 | .98965 | .98948 | .98930 | .98913 | .98896 | .98879 | .98862 | .98845 | .98828 |
| 158 | .98811 | .98794 | .98778 | .98761 | .98745 | .98728 | .98712 | .98696 | .98679 | .98663 |
| 159 | .98647 | .98631 | .98616 | .98600 | .98584 | .98569 | .98553 | .98538 | .98522 | .98507 |
| 160 | .98492 | .98477 | .98462 | .98447 | .98432 | .98417 | .98402 | .98388 | .98373 | .98359 |
| 161 | .98344 | .98330 | .98316 | .98302 | .98287 | .98273 | .98259 | .98246 | .98232 | .98218 |
| 162 | .98205 | .98191 | .98178 | .98164 | .98151 | .98138 | .98125 | .98111 | .98098 | .98086 |
| 163 | .98073 | .98060 | .98047 | .98035 | .98022 | .98010 | .97997 | .97985 | .97973 | .97961 |
| 164 | .97949 | .97937 | .97925 | .97913 | .97901 | .97890 | .97878 | .97867 | .97855 | .97844 |
| 165 | .97832 | .97821 | .97810 | .97799 | .97788 | .97777 | .97766 | .97756 | .97745 | .97734 |
| 166 | .97724 | .97713 | .97703 | .97693 | .97683 | .97673 | .97662 | .97652 | .97643 | .97633 |
| 167 | .97623 | .97613 | .97604 | .97594 | .97585 | .97575 | .97566 | .97557 | .97548 | .97539 |
| 168 | .97530 | .97521 | .97512 | .97503 | .97495 | .97486 | .97477 | .97469 | .97461 | .97452 |
| 169 | .97444 | .97436 | .97428 | .97420 | .97412 | .97404 | .97396 | .97389 | .97381 | .97373 |
| 170 | .97366 | .97359 | .97351 | .97344 | .97337 | .97330 | .97323 | .97316 | .97309 | .97302 |
| 171 | .97295 | .97289 | .97282 | .97276 | .97269 | .97263 | .97257 | .97250 | .97244 | .97238 |
| 172 | .97232 | .97226 | .97221 | .97215 | .97209 | .97204 | .97198 | .97193 | .97187 | .97182 |
| 173 | .97177 | .97172 | .97167 | .97162 | .97157 | .97152 | .97147 | .97142 | .97138 | .97133 |
| 174 | .97129 | .97124 | .97120 | .97116 | .97111 | .97107 | .97103 | .97099 | .97095 | .97092 |
| 175 | .97088 | .97084 | .97081 | .97077 | .97074 | .97070 | .97067 | .97064 | .97061 | .97058 |





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